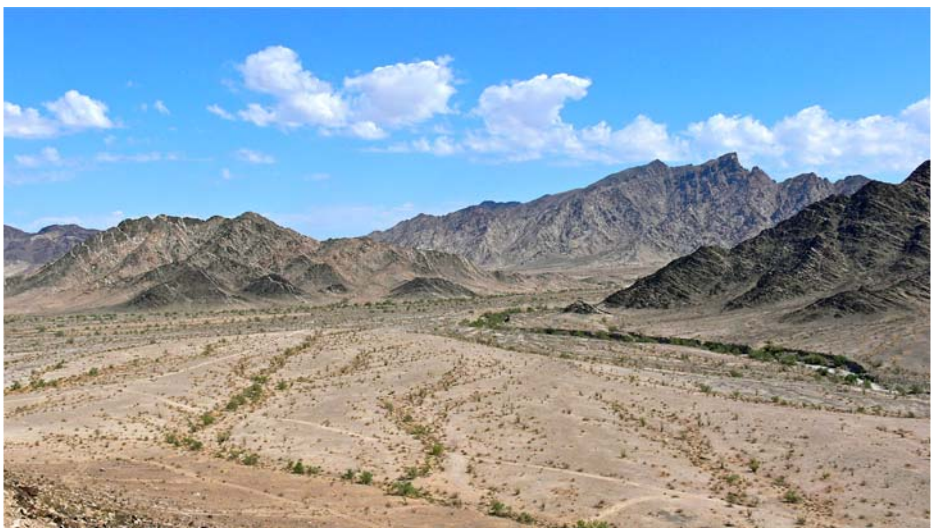
BLM

United States Department of the Interior
Bureau of Land Management

MCCOY SOLAR ENERGY PROJECT

PROPOSED PLAN AMENDMENT AND FINAL ENVIRONMENTAL IMPACT STATEMENT



Volume 1 of 2

December 2012

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DOI Control #: DES 12-21
Publication Index #: BLM/CA/ES-2013-008+1793

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United States Department of the Interior
Bureau of Land Management

Proposed Plan Amendment / Final EIS for the McCoy Solar Energy Project

For the

Palm Springs – South Coast Field Office
Palm Springs, California

December 2012

DOI Control #: DES 12-21

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BUREAU OF LAND MANAGEMENT
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In Reply Refer To:
8100 (P)
CAD060.00
CACA-48728/2800(P)

Dear Reader:

Enclosed is the Proposed Resource Management Plan Amendment/Final Environmental Impact Statement (PA/FEIS) for the California Desert Conservation Area (CDCA) Plan of 1980, as amended (CDCA Plan) and right-of-way grant application of McCoy Solar, LLC[1] (Applicant) for the McCoy Solar Energy Project (MSEP). The Bureau of Land Management (BLM) prepared the PA/FEIS in consultation with cooperating agencies, taking into account public comments received during the Federal Land Policy and Management Act (FLPMA) and National Environmental Policy Act (NEPA) processes. The proposed decision on the plan amendment would add the MSEP site to those identified in the current CDCA Plan, as amended, for solar energy production. The proposed decision on the MSEP is whether to approve the right-of-way grant applied for on behalf of the Applicant.

This PA/FEIS for the MSEP has been developed in accordance with FLPMA and NEPA. The PA is based largely on the agency preferred alternative, which combines elements of Alternative 1's Proposed Action and Alternative 3's centrally-located generation-tie line and access road route. Both alternatives were described and analyzed in the Draft Resource Management Plan Amendment/Draft Environmental Impact Statement (Draft PA/EIS), which was released on May 25, 2012. The PA/FEIS for the MSEP contains the proposed plan and project decisions, an analysis of the impacts of those decisions, copies of written comments received during the public review period for the Draft PA/EIS, and responses to those comments.

Pursuant to BLM's planning regulations (43 CFR §1610.5-2), any person who participated in the planning process for the proposed resource management plan amendment and has an interest that is or may be adversely affected by the proposed amendment may protest such amendment within 30 days from the date the Environmental Protection Agency publishes its notice of availability for the PA/FEIS in the *Federal Register*. Unlike the planning decision, issuance of the proposed right-of-way grant is an implementation decision that is not subject to protest under the BLM planning regulations.

For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (Attachment 1). The regulations specify the required elements in a protest. Protesting parties should take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or

[1] McCoy Solar LLC is a subsidiary of NextEra Energy Resources LLC.

summaries, correspondence, etc.). To aid in ensuring the completeness of the protest, a protest checklist is attached to this letter (labeled as Attachment 2). All protests must be in writing and mailed to one of the following addresses:

Regular Mail:
Director (210)
Attention: Brenda Hudgens-Williams
BLM Protest Coordinator
P.O. Box 71383
Washington, D.C. 20024-1383

Overnight Mail or Other Delivery:
Director (210)
Attention: Brenda Hudgens-Williams
BLM Protest Coordinator
20 M Street, S.E., Room 2134LM
Washington, DC 20003

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Emailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams - BLM Protest Expeditor at 202-912-7129, and emailed protests to *Brenda_Hudgens-Williams@blm.gov*.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all protests, the BLM may issue a Record of Decision (ROD) adopting the Approved PA and making a decision regarding issuance of the right-of-way grant for the MSEP. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the "Planning" page of the BLM national website (*http://www.blm.gov/planning*), or by mail upon request.

Sincerely,

John R. Kalish
Field Manager

Attachment 1

Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents
Subpart 1610--Resource Management Planning
Sec. 1610.5-2 Protest procedures.

(a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

(i) The name, mailing address, telephone number and interest of the person filing the protest;
(ii) A statement of the issue or issues being protested;
(iii) A statement of the part or parts of the plan or amendment being protested;
(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
(v) A concise statement explaining why the State Director's decision is believed to be wrong.

(3)

The Director shall promptly render a decision on the protest. The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested.

(b) The decision of the Director shall be the final decision of the Department of the Interior.

Attachment 2

Resource Management Plan Protest
Critical Item Checklist

The following items *must* be included to constitute a valid protest whether using this optional format, or a narrative letter.
(43 CFR 1610.5-2)

BLM's practice is to make comments, including names and home addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment--including your personal identifying information--may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

Resource Management Plan (RMP) or Amendment (RMPA) being protested:

Name:
Address:
Phone Number: ( )

Your interest in filing this protest (how will you be adversely affected by the approval or amendment of this plan?):

Issue or issues being protested:

Statement of the part or parts of the plan being protested:

Attach copies of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, <u>OR an indication of the date the issue(s) were discussed for the record</u>.
Date(s):

A concise statement explaining why the State Director's decision is believed to be wrong:

California Desert District

McCoy Solar Energy Project

Proposed Plan Amendment/Final Environmental Impact Statement

Lead Agency: Bureau of Land Management (BLM)
California Desert District (CDD)
Moreno Valley, California

For further information, contact:
Jeff Childers, Project Manager
California Desert District
22835 Calle San Juan De Los Lagos
Moreno Valley, CA, 92553

Abstract

This Proposed Plan Amendment/Final Environmental Impact Statement (PA/FEIS) addresses the possible United States Bureau of Land Management (BLM) approval of an amendment to the *California Desert Conservation Area Plan of 1980, as amended* (CDCA Plan) to allow for solar energy-related use of specified property and of a right-of-way (ROW) grant to lease land managed by the BLM for construction, operation, maintenance, and decommissioning of a solar electricity generation facility. The Agency Preferred Alternative covers approximately 4,014 acres managed by the BLM (and a total of approximately 4,491 acres, including private land), and would generate up to 750 megawatts (MW) of electricity annually. The PA/FEIS identifies impacts of the Agency Preferred Alternative, including impacts related to biological resources, cultural resources, hazards, visual resources, hydrology, and water resources. Many of the adverse impacts can be avoided or substantially reduced based on compliance with applicable laws, ordinances, regulations and standards, and compliance with measures provided in this PA/FEIS.

Chapter 2 describes four alternatives, including: (1) amendment of the CDCA Plan and grant of a ROW for the project as proposed by the Applicant (up to 750 MW within a ROW of approximately 7,700 acres); (2) amendment of the CDCA Plan and grant of a ROW for a modified version of the project (up to 250 MW on a 2,259-acre solar plant site); (3) grant of a ROW for either a reconfigured central or western generation transmission (gen-tie) line and access road route that could be combined with either Alternative 1 or Alternative 2; and (4) taking No Action, in which case the Applicant's ROW application would be denied and the BLM would not amend the CDCA Plan to identify the project as a suitable use of the ROW application area. Chapter 3 describes the existing conditions on and in the vicinity of the project site. Chapter 4 describes the potential adverse environmental impacts expected under each of the Alternatives, including the Agency Preferred Alternative, which is a combination of Alternative 1 and Alternative 3's reconfigured central gen-tie line and access road route.

The Field Manager of the Palm Springs South Coast Field Office has the authority for site management of future activities related to the ROW grant and is the BLM Authorized Officer for this PA/FEIS.

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EXECUTIVE SUMMARY

ES.1 Background and Project Overview

McCoy Solar LLC, a subsidiary of NextEra Energy Resources LLC (Applicant), proposes to construct, operate, maintain, and decommission an up-to-750 megawatt (MW) photovoltaic (PV) solar energy generating facility and related infrastructure in unincorporated Riverside County, California, to be known as the McCoy Solar Energy Project (MSEP or Project). The majority of the MSEP would be developed on public land administered by the Bureau of Land Management (BLM). Approximately 477 acres of privately owned land would be included in the proposed solar plant site boundary. The Project would generate and deliver solar-generated power to the California electrical grid through an interconnection at the Colorado River Substation (CRS) owned by Southern California Edison (SCE).

To initiate the environmental review process under the National Environmental Policy Act (NEPA), the Applicant submitted a Standard Form (SF)-299 requesting a right-of-way (ROW) grant (Application CACA-048728) from the BLM for approximately 7,700 acres to develop the majority of the Project on BLM-administered land.[1] Within the 7,700 acre ROW area, construction and operation would disturb approximately 3,960 acres for a solar plant site, 146 acres for linear facilities outside the solar plant site, including a 14.5-mile generation-tie (gen-tie) line and access road within a right-of-way width of 100 feet (Eastern Route) and a 2-acre switchyard to be located adjacent to and connect into the CRS. Remaining acreage that would not be disturbed would not be part of the ROW grant. The MSEP also would disturb approximately 477 acres of lands within Unit 1 of the solar plant site that are under County jurisdiction and outside of the ROW grant boundary. If a ROW grant is approved for the MSEP, then a land use plan amendment (PA) also would be required to identify the site in the California Desert Conservation Area Plan of 1980, as amended (CDCA Plan) as an appropriate site for the proposed use.[2] The CDCA Plan Amendment also would require analysis of proposed impacts under NEPA. The BLM is the NEPA lead agency. The Applicant also has a loan guarantee

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1 The Applicant's initial CACA-048728 application was filed on January 29, 2007, for 20,480 acres. It later was modified by a letter on January 15, 2008, to reduce the requested ROW size by 9,920 acres to 10,560 acres. By letter of July 15, 2010, the Applicant requested that an additional 3,040 acres be removed from the requested ROW area to reflect the current approximately 7,700-acre ROW application area. On December 1, 2010, the Applicant filed an amended SF-299 to include land needed for linear facilities such as the generation-transmission (gen-tie) and access roads. In November 2012, the Applicant revised the western boundary of the solar plant site based on discussions with regulatory agencies, including USFWS, CDFG, and BLM.

2 The Project site is located within the Riverside East Solar Energy Zone as designated in the Record of Decision for the Solar Programmatic EIS signed on October 12, 2012 (the "Solar PEIS ROD"). However, since the MSEP ROW application is listed as a Pending Application in the Solar PEIS ROD, it is not subject to that ROD (Solar PEIS ROD §B.1.2) or the Plan Amendments made in that decision.

application pending with the U.S. Department of Energy (DOE). If the DOE decides to enter into negotiation of a possible loan guarantee with the Applicant and thereafter accepts the Applicant's application as suitable for funding, the DOE may adopt this PA/FEIS to meet its NEPA requirements in making a determination of funding.

Additionally, the Applicant has an Application for Land Use and Development pending with the Riverside County (County) Planning Department seeking a Conditional Use Permit (CUP) for the portion of the solar plant site that would be developed on private land under the County's land use jurisdiction and a Public Use Permit (PUP) for the portion of the gen-tie line that would be developed on private land and on a small area of County-owned property. The BLM anticipates that CEQA review would be required before the Project could proceed.

ES.2 Purpose and Need

ES.2.1 BLM Purpose and Need

NEPA guidance published by the Council on Environmental Quality (CEQ) states that a environmental impact statement's Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 Code of Federal Regulations (CFR) §1502.13). The following discussion sets forth the purpose of and need for the action as required under NEPA.

The BLM's purpose and need for the MSEP is to respond to the Applicant's application under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC §1701 et seq.) for a ROW grant to construct, operate, maintain, and decommission a solar PV facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to the Applicant for the MSEP.

The BLM's action also will include consideration of a concurrent amendment of the CDCA Plan. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. California Desert Conservation Area (CDCA) boundaries are shown on Figure 1-1.

The Record of Decision signed by Secretary of the Interior Ken Salazar for the Solar Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (the "Solar PEIS ROD") (BLM, 2012) identified the McCoy ROW application area as part of the Riverside East Solar Energy Zone (SEZ) and thus, available for solar development for all but pending projects – pending projects (such as the MSEP) still require a project-specific CDCA Plan amendment. Therefore, if the BLM decides to approve the issuance of a ROW grant for the MSEP, a CDCA Plan amendment also would be required. See Section ES.3.1 for additional discussion of the relationship between the Solar PEIS and ROD and this PA/EIS.

In conjunction with FLPMA, BLM authorities include:

1. Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

2. The Energy Policy Act of 2005 (EPAct), §211 of which states: "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on public lands with a generation capacity of at least 10,000 megawatts of electricity."

3. Secretarial Order 3285A, (March 11, 2009, amended February 22, 2010), which "establishes the development of renewable energy as a priority for the Department of the Interior."

ES.2.2 Department of Energy Purpose and Need

If the Department of Energy (DOE) decides to enter into negotiation of a possible loan guarantee with the Applicant, the DOE may adopt this PA/FEIS to meet its NEPA requirements in making a determination of funding. The purpose and need for action by the DOE would be to comply with its mandate under the EPAct by selecting eligible projects that meet the goals of the EPAct.

The DOE will perform an independent review the PA/FEIS to ensure that DOE comments have been addressed and that the Proposed Action is substantially the same as the action described in the Draft PA/EIS. If these conditions are met, the DOE would adopt the PA/FEIS without recirculating it pursuant to the CEQ NEPA regulations at 40 CFR 1506.3(c).

The DOE would carry out a detailed financial, technical, and legal evaluation of the Project in the course of negotiating the terms and conditions of a possible federal loan guarantee pursuant to its procedures set out at 10 CFR Part 609. The DOE may reach agreement on a conditional commitment for a loan guarantee prior to the BLM's issuance of the ROW grant. Should this be the case, a condition precedent would be included in the conditional commitment requiring that the BLM ROW grant process be completed before DOE closes the loan guarantee transaction.

Following conclusion of the NEPA process and the BLM's decision, the DOE would issue a Record of Decision (ROD) and proceed to close the loan guarantee transaction provided that the Applicant has satisfied all the detailed terms and conditions contained in the conditional commitment and other related documents, and all other contractual, statutory, and regulatory requirements.

ES.3 Proposed Action and Alternatives

ES.3.1 Comparison of Alternatives

The Draft PA/EIS considered three action alternatives consisting of a Plan Amendment and Project components, one No Action alternative, and two Plan Amendment/No Project alternatives: One of the Plan Amendment/No Project alternatives (Alterntive 5) would have provided the BLM with an opportunity to deny the ROW application and amend the CDCA Plan to identify the Project application area (or a portion of it) as suitable for any type of solar energy development. The other Plan Amendment/No Project alternative (Alternative 6) would have provided the BLM with an opportunity to deny the ROW application and amend the CDCA Plan to identify the Project application area (or a portion of it) as unsuitable for any type of solar energy development. Neither Alternative 5 nor Alternative 6 has been carried forward in the PA/FEIS because when the Solar PEIS ROD identified the McCoy ROW application area as part of the Riverside East SEZ, and thus available for solar development, a decision was made as to the suitability or unsuitability of that area for solar energy development.[3] Therefore, this PA/FEIS does not consider those land use planning questions and Alternatives 5 and 6 have been removed from consideration.

The MSEP Applicant's initial ROW application predated the BLM's publication in the Federal Register of its intent to prepare the Solar PEIS (73 FR 30908). When the MSEP Draft PA/EIS was issued in May 2012, a Draft and Supplement to the Draft Solar PEIS had been issued for public review, but no final environmental analysis and no final decision had yet been reached. The Final Solar PEIS was released two months after the MSEP Draft PA/EIS (77 FR 44267). The Final Solar PEIS and ROD recognize the MSEP as a "pending" ROW application (Final Solar PEIS §9.4.22.2, p. 9.4-133). Pending applications like the MSEP are not subject to the Solar PEIS ROD (Solar PEIS ROD Section B.1.2) or to the CDCA Plan amendments made in that decision. By comparison, the Solar PEIS ROD and the CDCA Plan amendments it made would apply to any ROW application filed after (and so subject to) the Solar PEIS ROD.

Each of the remaining alternatives that were described in the Draft PA/EIS (Alternatives 1 through 4) is summarized below and described in detail in Chapter 2, *Proposed Action and Alternatives*:

Alternative 1: Proposed Action. The Proposed Action would consist of Units 1 and 2, for up to 750 MW. This alternative also would include a gen-tie line and access road route as well as a distribution line. The Project would permanently occupy an approximately 4,437-acre solar plant site, 14.5-mile gen-tie within a right-of-way width of 100 feet (Eastern Route), and 2-acre switch yard within an approximately 7,700-acre ROW on BLM-administered land, and 477 acres of privately owned land under County jurisdiction. This alternative would require a CDCA Plan Amendment.

Alternative 2: Reduced Acreage. This alternative would consist only of Unit 1, for a capacity of 250 MW. The solar plant site would permanently disturb 2,259 acres of BLM-administered land and 477 acres of privately owned land under County jurisdiction. Because this alternative can be supported by the proposed gen-tie line route or the Alternative 3 Central Route, no gen-tie line is included in the description of this alternative. This alternative would require a CDCA Plan Amendment.

[3] Interested members of the public had ample opportunity to provide input as to the suitability or unsuitability of the MSEP site as part of the larger Riverside East SEZ during the Solar PEIS process. Myriad opportunities to participate were provided as part of that public process, which included two scoping periods, 30 public meetings, a project-specific website, and electronic and physical addresses to submit input. See Section 10 of the Solar PEIS ROD (p. 20 et seq.), which describes these opportunities.

Alternative 3: Reconfigured Gen-Tie/Access Road Route. This alternative consists of two options for alternate gen-tie line routes:

> ***Central Route.*** The Central Route would be a total of 12.5 miles long, 5.5 miles of which would differ from the Proposed Action gen-tie line. It would be located farther west and would be collocated with the approved gen-tie line for the adjacent Blythe Solar Power Project (BSPP). A maintenance road and spur roads would be collocated with the Central Route gen-tie line.
>
> ***Western Route.*** The Western Route would be 15.5 miles long, 8.5 miles of which would differ from the Proposed Action gen-tie line. It would be located farther west than either the proposed route or the Central Route, and would travel along the western side of the adjacent BSPP. No maintenance road would be collocated with the Western Route gen-tie line.

Alternative 4: No Action. Under this alternative, the BLM would deny the Applicant's ROW grant application and no CDCA Plan Amendment would be required. However, the Solar PEIS ROD effected a CDCA Plan amendment designating the Riverside East SEZ (including the MSEP application area) as suitable for solar development. Accordingly, it is very likely that commercial-scale solar development would be promoted within the ROW application area even if the MSEP ROW application were denied. All other uses allowable on CDCA Multiple Use Class-L lands would continue to be available if the BLM selected the No Action Alternative.

ES.3.2 Lead Agency Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the Lead Agency's preference of action among the Proposed Action and alternatives. A NEPA Lead Agency may select a preferred alternative for a variety of reasons, including the agency's priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), the BLM has identified an Agency Preferred Alternative that combines the Proposed Action's approximately 4,437-acre solar plant site, Alternative 3's Central Route, and switchyard interconnection to the Colorado River Substation. The Agency Preferred Alternative is described in additional detail in Section 2.10, *Agency Preferred Alternative*.

ES.4 Connected Actions

No connected actions have been identified for the Proposed Action (40 CFR §1508.25 (a)(1); BLM NEPA Handbook H-1790-1).

ES.5 Cumulative Scenario

Many renewable energy and other projects are proposed throughout the California desert that were identified as potentially contributing to cumulative environmental impacts. Those cumulative projects are discussed in detail in Section 4.1.4, *Cumulative Scenario Approach*.

ES.6 Environmental Consequences

Table ES-1 summarizes the environmental impacts that would occur as a result of the Proposed Action and Alternatives by environmental parameter. The unavoidable adverse impacts that would remain after mitigation also are summarized briefly in these tables.

ES.6.1 Areas of Controversy

Comments were received during the scoping process for the MSEP. The scoping process and public input received during that process are provided in detail in Appendix B, *Scoping Report*. Based on input received from agencies, members of the public and others during the scoping period, initial areas of controversy related to the Project included:

Air Resources: Concerns related to potential air quality impacts as compared to national and state ambient air quality standards. See Section 4.2, *Air Resources*.

Biological Resources: The disturbance areas associated with the Proposed Action and Alternatives consist almost entirely of native habitats, including desert dry wash woodland, unvegetated ephemeral dry wash, Sonoran creosote bush scrub, and stabilized and partially stabilized desert dunes. Specific areas of controversy relating to biological resources relate to sensitive plant communities, special-status species, and mitigation measures. See Sections 4.3, *Biological Resources – Vegetation*; and 4.4, *Biological Resources – Wildlife*.

Cultural Resources: Concerns related to damage and loss of cultural and historic artifacts and other resources. See Section 4.5, *Cultural Resources*.

Hazards and Public Safety: Concerns related to site access by emergency service providers and interference with radio emergency communications. See Sections 4.9, *Hazards and Hazardous Materials*; and 4.22.3, *Transmission Line Safety and Nuisance*.

Water Resources: Concerns related generally to surface water and groundwater use and associated effects, and specifically to potential impacts to Colorado River water. See Section 4.20, *Water Resources*.

Alternatives: Concerns related to whether the range of alternatives was broad enough and how it could be expanded through the statement of the purpose and need for the Project.

The BLM distributed a Draft PA/EIS for public and agency review and comment on May 25, 2012 (77 Fed. Reg. 31355-02). The comment period ended August 23, 2012. Twenty-two comment letters were received. Based on input received, the BLM identified the following resources and issues as continuing areas of interest for this effort: biological resources, including desert tortoise and other special status wildlife species and vegetation; cultural resources, including prehistoric Native American resources; hazards, including fire hazards and hazardous materials; and water resources.

TABLE ES-1
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES			
	Alternative 1: Proposed Action	**Alternative 2: Reduced Acreage Alternative**	**Alternative 3: Reconfigured Gen-Tie/ Access Road Alternative**	**Alternative 4: No Action Alternative**
Air	*Construction*: NOx=9.9 tons/yr; VOC=1.9 tons/yr; CO=20.3 tons/yr; PM10=12.5 tons/yr; PM2.5=3.0 tons/yr; and SOx<0.1 tons/yr *Operation and Maintenance*: NOx= 0.1 tons/yr; VOC<0.1 tons/yr; CO=0.5 tons/yr; PM10=7.9 tons/yr; PM2.5=0.8; tons/yr; and SOx<0.1 tons/yr *Decommissioning*: Comparable in type and magnitude, but likely to be lower than, the construction emissions Maximum daily construction-related PM10 emissions would exceed the MDAQMD threshold.	*Construction*: NOx=9.9 tons/yr; VOC=1.7 tons/yr; CO=15.0 tons/yr; PM10=11.8 tons/yr; PM2.5=2.8 tons/yr; and SOx<0.1 tons/yr *Operation and Maintenance*: approximately half of Alternative 1 emissions *Decommissioning*: Comparable in type and magnitude, but likely to be lower than, the construction emissions Maximum daily construction-related PM10 emissions would exceed the MDAQMD threshold.	*Central Route*: total maximum daily emissions same as Proposed Action, 0.1 ton less CO and 0.1 ton less NO_x during 2014 construction year. *Western Route*: total maximum daily emissions same as Proposed Action, 0.1 ton more CO and 0.1 ton more NO_x during 2014 construction year.	No impact
Vegetation	4,582 acres vegetation communities disturbed; 7 special status plant species affected	2,266 acres vegetation communities disturbed; 7 special status plant species affected	*Central Route*: 70 acres vegetation communities disturbed; 2 special status plant species affected *Western Route*: 183 acres vegetation communities disturbed; 2 special status plant species affected	No impact
Wildlife	*Construction*: 4,500 acres wildlife habitat lost; 20 special status wildlife species affected or potentially affected. *Operation and Maintenance*: disruption of migratory patterns; death or injury to individuals from striking powerlines, arrays, poles or being struck by vehicles; increased predation.	*Construction*: 2,260 acres wildlife habitat lost; 20 special status wildlife species affected or potentially affected. *Operations*: Similar to Proposed Action.	*Central Route:* 94 acres wildlife habitat lost; 16 special status wildlife species affected or potentially affected. *Western Route:* 150 acres wildlife habitat lost; 16 special status wildlife species affected or potentially affected.	No impact
Cultural and historic	• 94 known sites permanently affected • Possibly additional resources yet to be discovered during construction	• 9 known sites permanently affected • Possibly additional resources yet to be discovered during construction	• *Central Route*: 12 known sites permanently affected • *Western Route*: 8 known sites permanently affected • Possibly additional resources yet to be discovered during construction	No impact
Environmental Justice	No Impact	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES			
	Alternative 1: Proposed Action	**Alternative 2: Reduced Acreage Alternative**	**Alternative 3: Reconfigured Gen-Tie/ Access Road Alternative**	**Alternative 4: No Action Alternative**
Geology and Soils	Low potential for adverse soil conditions and ground subsidence due to groundwater pumping. Potential for wind and water erosion.	Similar potential for adverse soil conditions and seismic-related ground failures. Reduced potential for wind and water erosion and ground subsidence due to groundwater pumping.	Similar to Proposed Action	No impact
Global Climate Change	Amortized annual emissions of 7,843 metric tons CO_2e; net reduction of 631,218 metric tons CO_2e per year compared to natural gas-fired electricity.	Amortized annual emissions of 3,850 metric tons CO_2e; net reduction of 209,170 metric tons CO_2e per year compared to natural gas-fired electricity.	*Central Route*: 106 fewer amortized metric tons of CO_2e per year compared to the Proposed Action. *Western Route*: 73 additional amortized metric tons of CO_2e per year compared to the Proposed Action.	No impact, no net reduction of CO_2e compared to natural gas-fired electricity.
Hazards and Hazardous Materials	Risk of accidental release of hazardous materials 7.9 miles of gen-tie line in Blythe Airport Influence Zone	Slightly reduced risk of accidental release of hazardous materials	*Central Route:* 5.38 miles of gen-tie line in Blythe Airport Influence Zone *Western Route*: 5.86 miles of gen-tie line in Blythe Airport Influence Zone	No impact
Lands and Realty	Minimal impacts to designated corridors from gen-tie line crossing. No impact to existing uses. Restriction of multiple use opportunities on 4,019 acres to a single dominant use.	Land use and realty effects similar to the Proposed Action. Restriction of multiple use opportunities on 1,782 acres to a single dominant use.	*Central Route*: Approximately 10 fewer acres of land restricted to a single domininant use compared to the Proposed Action. *Western Route*: Approximately 10 more acres of land restricted to a single domininant use compared to the Proposed Action.	No impact
Minerals	Solar plant site unavailable for mineral resource extraction	Smaller land area unavailable for mineral resource extraction	Similar to the Proposed Action	No impact
Noise	*Construction and Decommissioning*: short-term noise levels would be a maximum of 46 dBA at the nearest sensitive receptor. *Operation and Maintenance*: noise levels would be a maximum of 32 dBA during wet weather conditions at the nearest sensitive receptor.	*Construction and Decommissioning*: short-term noise levels from the solar plant site would be a maximum of 33 dBA at the nearest sensitive receptor. *Operation and Maintenance*: No effect from solar plant.	*Construction and Decommissioning*: short-term noise levels would be 48 to 51 dBA at the nearest sensitive receptor. *Operation and Maintenance*: Noise levels would be a maximum of 33 to 35 dBA during wet weather conditions at the nearest sensitive receptor.	No impact
Paleontology	Potential damage and/or destruction of paleontological resources.	Reduced potential for damage and/or destruction of paleontological resources.	Slightly reduced or increased potential for damage and/or destruction of paleontological resources.	No impact

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES			
	Alternative 1: Proposed Action	**Alternative 2: Reduced Acreage Alternative**	**Alternative 3: Reconfigured Gen-Tie/ Access Road Alternative**	**Alternative 4: No Action Alternative**
Recreation and Public Access	*Construction and Decommissioning*: impacts from noise, fugitive dust, and increased use of recreational sites. Temporary closures of OHV routes. *Operation and Maintenance*: Site not available for recreational use. Permanent closure and relocation of one OHV route.	*Construction and Decommissioning*: reduced impacts from noise and fugitive dust. Reduced duration of increased use of recreational sites. *Operation and Maintenance*: Reduced acreage unavailable for recreational use. Same effect on OHV route as Proposed Action.	Similar to the Proposed Action	No impact
Social & Economics	*Construction:* Employment of 341 workers (average) and 750 workers (peak). Most, if not all, expected to live within two hours of site. • No new housing or motel development induced. • Total annual direct construction labor income of $19.3 million. • Total annual indirect and induced economic benefits of $71.4 million and 503 jobs. • Riverside County sales tax revenues of $3 million. *Operation and Maintenance:* Annual employment of 20 workers, expected to live close to the site. • No new housing growth induced. • Total annual direct labor income of $1.3 million. • Total annual indirect and induced economic benefits of $5.3 million and 34 jobs. • Riverside County annual property tax revenues of $64,900. • Riverside County annual B-29 tax revenue of up to $1.9 million. *Decommissioning:* Temporary spending and employment benefit from deconstruction and site restoration work.	*Construction*: Shorter duration of employment of temporary workers, but same number of workers and same annual labor income effect. • Riverside County sales tax revenues of $1 million. *Operation and Maintenance:* Annual employment of 13 workers, expected to live close to the site. • Total annual direct labor income of $0.9 million. • Total annual indirect and induced economic benefits of $3.35 million and 23 jobs. • Riverside County annual B-29 tax revenue of up to $977,000. *Decommissioning:* Similar to construction, no sales tax generated.	*Central Ro*ute: Labor and income-related effects similar to Proposed Action. • Riverside County annual property tax revenues of $55,200. *Western Route*: Labor and income-related effects similar to Proposed Action. • Riverside County annual property tax revenues of $68,400.	No impact
Special Designations	Direct impact on 1,089 acres identified as lands with wilderness characteristics.	No impact	No impact	No impact

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES			
	Alternative 1: Proposed Action	**Alternative 2: Reduced Acreage Alternative**	**Alternative 3: Reconfigured Gen-Tie/ Access Road Alternative**	**Alternative 4: No Action Alternative**
Transportation and Traffic	*Construction and Decommissioning*: increased traffic (1,260 daily trips) with no change in LOS on affected roadways, temporary lane/road closures. *Operation and Maintenance*: minor traffic increase.	*Construction and Decommissioning*: Reduced duration of traffic increases. *Operation and Maintenance*: Slightly reduced traffic increase.	Similar to Proposed Action.	No impact
Utilities	*Construction*: 750 acre-feet of water consumption *Operation and Maintenance*: 930 to 1,350 acre-feet of water consumption *Decommissioning*: non-recyclable solid waste landfilled.	*Construction*: Reduced water consumption *Operation and Maintenance*: reduced water consumption *Decommissioning*: reduced amount of non-recyclable solid waste landfilled.	Similar to Proposed Action.	No impact
Visual	*Construction*: Mitigable short-term impacts from construction lighting and visible dust plumes; adverse effects from large-scale visual disturbance in the landscape. *Operation and Maintenance*: Moderate adverse visual impact for motorists on Midland Road, users of the Midland LTVA, residential communities on the southern edge of the mesa, and recreational users, including OHVs. *Decommissioning*: Mitigable short-term impacts prior to successful restoration.	Similar to Proposed Action, but occurring on a smaller land area. May be less visible from some viewpoints.	Slightly reduced (farther from KOPs).	No impact
Water	Pumping/Consumption of up to 2,100 acre-feet of groundwater over life of Project, not resulting in significant drawdown of groundwater. Mitigable alteration of stormwater flows and drainage, including re-routing of existing flowpaths. Mitigable risk from on-site flooding. Mitigable water quality effects including use of heavy machinery and erosion and sedimentation during construction and decommissioning, and use of septic system, evaporation ponds, and spill cleanup facilities during operation.	Reduced intensity of impacts related to water quality, groundwater levels and storage, erosion and sedimentation, surface water hydrology, flooding, and on-site flooding.	Similar to the Proposed Action	No impact

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES			
	Alternative 1: Proposed Action	**Alternative 2: Reduced Acreage Alternative**	**Alternative 3: Reconfigured Gen-Tie/ Access Road Alternative**	**Alternative 4: No Action Alternative**
Wildland Fire Ecology	*Construction and Decommissioning*: Slight increase in threat of wildland fires in area due to construction and demolition activities. *Operation and Maintenance*: increased risk of wildland fire due to establishment of non-native plants.	Reduced risk of wildland fires compared to Proposed Action due to smaller site footprint and reduced disturbance of native vegetation.	Similar to Proposed Action	No impact
Transmission Line Safety and Nuisance	Mitigable impacts related to interference with radio-frequency communication, hazardous and nuisance shocks, and electric and magnetic field (EMF) exposure.	Similar to Proposed Action	Similar to Proposed Action	No impact

ES.6.1.1 Issues to be Resolved

The BLM will decide whether to grant the requested ROW, grant the ROW with modifications, or deny the ROW. Modifications may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR §2805.10(a)(1)). The BLM also will decide whether or not to amend the CDCA Plan to identify the application area as suitable for the proposed solar energy development.

ES.7 Lead Agency Roles and Approvals

The BLM's authority for the Proposed Action includes the FLPMA, EPAct §211, and BLM's Solar Energy Development Policy. The FLPMA authorizes the BLM to issue ROW grants for renewable energy projects. BLM's authority also extends to the BLM lands in the Palm Springs/ South Coast Field Office, which are governed by the CDCA Plan. Because the CDCA Plan would need to be amended to allow the MSEP on the proposed site, BLM also would oversee the CDCA Plan amendment process for the Project.

ES.8 Organizations and Persons Consulted

In addition to the completing the scoping process and responding to comments on the Draft PA/EIS, the BLM has been consulting and coordinating with public agencies that may take action on the Proposed Action. Consultation and coordination is summarized below and described in detail in Chapter 5.

ES.8.1 Native American Consultation and Coordination

The BLM consults with Indian tribes on a government-to-government level in accordance with several authorities including NEPA, National Historic Preservation Act (NHPA) §106, American Indian Religious Freedom Act (AIRFA), and Executive Order 13007 as part of its responsibilities to identify, evaluate, and resolve adverse effects on cultural resources affected by BLM undertakings. Chapter 5, *Consultation and Coordination*, provides additional detail about these processes.

ES.8.2 United States Fish and Wildlife Service

The USFWS has jurisdiction over threatened and endangered species listed under the federal Endangered Species Act (FESA) (16 USC §1531 et seq.). Formal consultation with the USFWS under §7 of the FESA is required for any federal action that may adversely affect a federally listed species. This consultation was initiated through the preparation and submittal of a Biological Assessment (BA) and is expected to conclude with the USFWS's issuance of a Biological Opinion (BO) that specifies reasonable and prudent measures, which must be implemented for any protected species.

ES.8.3 Riverside County

Implementation of the MSEP would require discretionary approvals from Riverside County, including a CUP and a PUP. The County also has jurisdiction to issue discretionary approvals for any easements, rights-of-way and/or encroachment permits where County facilities are concerned. The County participated in the development of the Draft PA/EIS toward satisfying the requirements of the California Environmental Quality Act (CEQA) with respect to its decision-making authority. The County participated in a joint scoping process (including joint public scoping meetings in Palm Desert and Blythe on September 20, 2011 and October 19, 2011), and provided input on the administrative draft document. However, in March, 2012, the County returned the Applicant's CUP application, which prompted the BLM to bifurcate the environmental review process. The Applicant since has re-filed the CUP application, and the County's CEQA process is proceeding separately from the NEPA process.

ES.8.4 California Department of Fish and Game

The California Department of Fish and Game (CDFG) protects aquatic species and habitats within the state through regulation of modifications to streambeds under §1602 of the Fish and Game Code. The BLM and the Applicant have provided information to CDFG to assist the agency in its determination of the impacts to streambeds, and identification of permit and mitigation requirements. The Applicant filed a Streambed Alteration Agreement with CDFG. The requirements of the Streambed Alteration Agreement will be included as a recommended Mitigation Measure. CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code §2050 et seq.). The Applicant has filed for the appropriate incidental take authorization, and CDFG has deemed the application complete. CDFG may issue an incidental take permit to authorize take under CESA.

ES.9 Public Participation

Public participation activities were conducted by the BLM in compliance with the requirements of NEPA for the MSEP. The BLM's scoping activities are described in detail in the Scoping Report, which is provided in Appendix B. The Scoping Report documents the Notice of Intent, scoping meetings, workshops, and comments received during the scoping process. For the Draft PA/EIS, public input was solicited in the Notice of Availability published in the Federal Register on May 25, 2012 (77 Fed. Reg. 31355-02). The comment period remained open until August 23, 2012. Twenty-two comment letters were received from members of the public, agencies, and organizations. Section 5.5.3 of the PA/FEIS provides consolidated responses (called "Common Responses") for topics on which a number of similar and related comments were received and an individual response to each individual comment is provided in Appendix K.

CHAPTER 1
Introduction and Purpose and Need

1.1 Introduction

This Proposed Plan Amendment/Final Environmental Impact Statement (PA/FEIS) analyzes impacts of the project described in the right-of-way (ROW) grant application number CACA-048728 for 7,700 acres filed with the Bureau of Land Management (BLM) on January 29, 2007 and revised July 10, 2010, and the Application for Land Use and Development for 477 acres filed with Riverside County (County) on May 16, 2011 by McCoy Solar LLC[1] (Applicant) for the McCoy Solar Energy Project (MSEP or Project). The Regional Context is shown in Figure 1-1 (see Appendix A for all figures referenced in the PA/FEIS); the Project Location, Proposed Site Layout, and Solar Unit Detail are shown in Figures 2-1, 2-2, and 2-3.

The PA/FEIS presents the potential effects of the Proposed Action (consisting of the MSEP and the amendment of the California Desert Conservation Area Plan of 1980, as amended (CDCA Plan)) and three other alternatives on BLM-administered lands and privately owned lands under the County's jurisdiction. In this analysis, a number of other alternatives to the Proposed Action were developed and evaluated by the BLM but ultimately not carried forward for detailed analysis (see Section 2.9 for further information). These include alternative sites, other solar and renewable technologies, generation technologies using different fuels, and conservation and demand-side management. Of the 21 alternatives considered, four alternatives were determined by the BLM to warrant detailed analysis: Alternative 1, which is the Proposed Action; Alternative 2, a Reduced Acreage Alternative that would generate 250 megawatts (MW) instead of the proposed 750 MW; Alternative 3, which includes two alternate reconfigured generation transmission (gen-tie) line/access road routes that could be combined with either Alternative 1 or Alternative 2; and Alternative 4, No Action.

Publication in the Federal Register of the BLM's Notice of Availability (NOA) for the Draft PA/EIS (77 FR 31386-01) initiated a 90-day public review and comment period that began May 25, 2012 and concluded August 23, 2012. Twenty-two comment letters were received. Section 5.5.3 provides consolidated responses (called "Common Responses") for topics on which a number of similar and related comments were received, and an individual response to each individual comment is provided in Appendix K.

1 McCoy Solar LLC is a subsidiary of NextEra Energy Resources LLC.

1.2 Purpose and Need

1.2.1 BLM Purpose and Need

National Environmental Policy Act (NEPA) guidance published by the Council on Environmental Quality (CEQ) states that an environmental impact statement's Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 Code of Federal Regulations (CFR) §1502.13). The following discussion sets forth the BLM's purpose of and need for the action.

The BLM's purpose and need for the MSEP is to respond to the Applicant's application under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC §1761(a)(4)) for a ROW grant to construct, operate, maintain, and decommission a solar photovoltaic (PV) facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. In accordance with §103(c) of FLPMA, public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way on public lands for systems of generation, transmission, and distribution of electric energy (43 USC §1761(a)(4)). Taking into account BLM's multiple use mandate, the BLM will decide whether to approve, approve with modification(s), or deny issuance of a ROW grant to the Applicant for the proposed MSEP.

The BLM's action also will include consideration of a concurrent amendment of the CDCA Plan. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan be added to it through the land use plan amendment process. California Desert Conservation Area (CDCA) boundaries are shown on Figure 1-1.[2]

The Proposed Action, if approved, also would assist the BLM in addressing several management and policy objectives advanced through the following authorities applicable to the BLM:

1. Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

2. Section 211 of the Energy Policy Act of 2005 (EPAct), which established a goal for the Secretary of the Interior to approve 10,000 MW of electricity from non-hydropower renewable energy projects located on public lands.

[2] The MSEP site is within the CDCA as well as the Riverside East Solar Energy Zone (SEZ) as designated in the Record of Decision signed by Secretary of the Interior Ken Salazar for the Solar Programmatic Environmental Impact Statement (the "Solar PEIS ROD") (BLM, 2012). The Solar PEIS ROD amended the CDCA Plan to identify lands within the Riverside East SEZ, including the MSEP ROW application area, as suitable for solar energy development; however pending projects (which include the MSEP) are not subject to the decisions in the Solar PEIS ROD and still require a project-specific CDCA Plan amendment. Therefore, if the BLM decides to approve the issuance of a ROW grant for the MSEP, a CDCA Plan amendment also would be required.

3. Secretarial Order 3285A1 (March 11, 2009, as amended February 22, 2010), which "establishes the development of renewable energy as a priority for the Department of the Interior."

1.2.2 Department of Energy Purpose and Need

If the Department of Energy (DOE) decides to enter into negotiation of a possible loan guarantee with the Applicant, the DOE may adopt this PA/FEIS to meet its NEPA requirements in making a determination of funding. The purpose and need for action by the DOE would be to comply with its mandate under the EPAct by selecting eligible projects that meet the goals of the EPAct.

The DOE will perform an independent review the PA/FEIS to ensure that DOE comments have been addressed and that the Proposed Action is substantially the same as the action described in the Draft PA/EIS. If these conditions are met, the DOE would adopt the PA/FEIS without recirculating it pursuant to the CEQ NEPA regulations at 40 CFR 1506.3(c).

The DOE would carry out a detailed financial, technical, and legal evaluation of the Project in the course of negotiating the terms and conditions of a possible federal loan guarantee pursuant to its procedures set out at 10 CFR Part 609. The DOE may reach agreement on a conditional commitment for a loan guarantee prior to the BLM's issuance of the ROW grant. Should this be the case, a condition precedent would be included in the conditional commitment requiring that the BLM ROW grant process be completed before DOE closes the loan guarantee transaction.

Following conclusion of the NEPA process and the BLM's decision, the DOE would issue a Record of Decision (ROD) and proceed to close the loan guarantee transaction provided that the Applicant has satisfied all the detailed terms and conditions contained in the conditional commitment and other related documents, and all other contractual, statutory, and regulatory requirements.

1.3 Project Location and Overview

The Applicant proposes to construct, operate, maintain, and decommission a solar PV electric generating facility composed of two units. Unit 1 would have a capacity of up to 250 MW and Unit 2 would have a capacity of up to 500 MW for a total of up to 750 MW. The MSEP would be located in the southern California inland desert, approximately 13 miles northwest of the City of Blythe and 6 miles north of the Interstate 10 (I-10) freeway in Riverside County, California (Figure 2-1).

As reflected in the ROW grant application filed with the BLM, and subsequently designated as ROW # CACA-048728 for BLM record tracking, the MSEP would be located primarily on BLM-administered land, in Sections or portions of Sections 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36, Township 5S, Range 21E. The Applicant is seeking a ROW grant for approximately 7,700 acres. Within the 7,700 acre ROW area, construction and operation would disturb approximately 3,960 acres for a solar plant site, 146 acres for linear facilities outside the solar plant site, including a 14.5-mile generation-tie (gen-tie) line and access road within a right-of-way width of 100 feet (Eastern Route) and a 2-acre switchyard to be located adjacent to and connect into the CRS.

Remaining acreage that would not be disturbed would not be part of the ROW grant. The MSEP also would disturb approximately 477 acres of lands within Unit 1 of the solar plant site that are under County jurisdiction and outside of the ROW grant boundary.

1.4 Major Authorizing Laws and Regulations/Agency Roles and Authorizations

The primary agency-specific authorizing laws, regulations, and policies governing the Lead Agencies' decisions are summarized below. Other relevant laws, regulations, plans, and policies are summarized in the resource- and issue-specific sections in Chapter 3.

1.4.1 BLM

BLM's authority and policy guidance for making a decision related to the Proposed Action is derived from FLPMA (43 USC §1701 et. seq.), EPAct §211 (119 Stat. 594, 600), and BLM's Solar Energy Development Policy of April 4, 2007. FLPMA authorizes the BLM to issue ROW grants for systems for generation, transmission, and distribution of electric energy. Section 211 of the EPAct states that the Secretary of the Interior should seek to have approved a minimum of 10,000 MW of renewable energy-generating capacity on public lands by 2015. The BLM's policies and procedures for authorizing individual solar energy projects are found in the BLM's Solar Energy Development Policy of April 4, 2007.

1.4.2 U.S. Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) has jurisdiction over threatened and endangered species listed under the Federal Endangered Species Act (FESA) (16 USC 1531 et seq.). Formal consultation with the USFWS under §7 of the FESA is required for any federal action that may adversely affect a federally listed species. This consultation was initiated through the preparation and submittal of a Biological Assessment (BA) and is expected to conclude with the USFWS's issuance of a Biological Opinion (BO) that specifies reasonable and prudent measures that must be implemented for any protected species.

1.4.3 U.S. Army Corps of Engineers

The United States Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources, under §404 of the Clean Water Act (CWA). Under that authority, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to retain a §404 permit. Throughout the NEPA process, the BLM has provided information to the USACE to assist the agency in making a determination regarding its jurisdiction and the need for a §404 permit. The USACE issued a determination on August 30, 2011, that the proposed MSEP site does not contain waters of the United States pursuant to 33 CFR §325.9 (USACE, 2011).

1.4.4 Riverside County

Implementation of the portions of the proposed MSEP that would be located on private or County-owned lands would require discretionary approvals from Riverside County, including a CUP and Public Use Permit (PUP). Riverside County would be responsible for complying with the California Environmental Quality Act (CEQA) before the County may approve the portion of the MSEP under its land use jurisdiction.

1.4.5 California Department of Fish and Game

The California Department of Fish and Game (CDFG) protects fish and aquatic habitats within the state through regulation of modifications to streambeds, under §1602 of the California Fish and Game Code. CDFG has interpreted the term “streambed” to encompass all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. In the case of vegetated ephemeral dry washes, such as those present on the MSEP site, this CDFG interpretation often results in an asserted geographic jurisdictional area that is much wider than the active channel of the stream and, therefore, much wider than the jurisdiction of the USACE. Section 1602(a) states that it is unlawful for an entity to “substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake” without first notifying CDFG of that activity. If CDFG determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity will need to obtain a Lake or Streambed Alteration Agreement from the CDFG before it may commence the activity (Fish & Game Code §1602(a)(4)(B)). CDFG would include in the Lake or Streambed Alteration Agreement measures necessary to protect the affected resources. CDFG has received information about the MSEP to assist in its identification of permit and mitigation requirements. The Applicant filed a Streambed Alteration Agreement with CDFG. The requirements of any such agreement would apply to the Project independent of and in addition to mitigation measures included in the PA/FEIS.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code §2050, et seq.). If appropriate, the Applicant would be required to file an Incidental Take Permit application, and the requirements of the Incidental Take Permit would apply to the Project independent of and in addition to the mitigation measures included in the PA/FEIS.

1.5 Policy Consistency and Land Use Conformance

1.5.1 Relationship of the Proposed Action to the Solar PEIS

The MSEP is not subject to the Solar PEIS ROD, or the CDCA Plan amendments made as a result of that decision. Appendix B of the Solar PEIS ROD defines “pending” applications as “any applications… filed within SEZs before June 30, 2009.” The MSEP Applicant’s initial CACA-048728 application was filed on January 29, 2007, in an area that later was included in the Riverside East SEZ. Section B. 1.2 of the Solar PEIS ROD (p. 146) states, “Pending applications are not subject to any of the decisions adopted by this ROD." Consequently, the MSEP is not subject to the Solar PEIS ROD or to the CDCA Plan amendments made in that decision; instead, it remains subject to the pre-Solar PEIS ROD requirements of the CDCA Plan.

1.5.2 Relationship of the Proposed Action to Other BLM Policies, Plans, and Programs

Projects designated by the Solar PEIS ROD as "pending applications" within the California Desert District are governed by the CDCA Plan prior to its amendment by the Solar PEIS ROD. CDCA Plan boundaries are shown on Figure 1-1. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan be considered through the Plan Amendment process.

The MSEP site is classified as Multiple Use Class L (Limited Use) in the CDCA Plan. The Limited Use classification is intended to protect sensitive, natural, scenic, ecological, and cultural resource values. Public lands classified as Limited Use are managed to provide for multiple use of resources at a lower intensity, ensuring that sensitive values are not significantly diminished. Based on CDCA Plan Table 1, Multiple Use Class Guidelines, and CDCA Plan Chapter 3, Energy Production and Utility Corridors Element, solar uses are conditionally allowed in the Multiple Use Class L designation contingent on the CDCA Plan amendment process and NEPA requirements being met for the proposed use. Because the MSEP site was not identified in the CDCA Plan for such use when the MSEP application was filed, a CDCA Plan Amendment would be required if the BLM approved the Project. This PA/FEIS meets NEPA's requirements for consideration of the MSEP.

1.5.1.1 Planning Criteria Overview

The CDCA planning criteria set forth below are the constraints and ground rules that guide and direct the development of the PA. They ensure that the PA is tailored to the identified issues and ensure that unnecessary data collection and analyses are avoided. They focus on the decisions to be made in the PA, and will achieve the following:

> "Sites associated with power generation of transmission not identified in the Plan will be considered through the Plan Amendment process."

Because the MSEP is not currently identified within the CDCA, an amendment to identify it within the CDCA Plan is hereby proposed. Relevant guidelines are identified in Table 1, Multiple Use Class Guidelines, to the CDCA Plan (at page 15). As specified in the CDCA Chapter 7 Plan Amendment Process, there are three categories of Plan Amendments, including:

> **Category 1**, for proposed changes that will not result in significant environmental impact or analysis through an EIS;

> **Category 2**, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and

> **Category 3**, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the MSEP would require a Category 3 amendment. This section summarizes the procedures necessary to evaluate the PA.

1.5.1.2 Statement of Plan Amendment

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan lists a number of Category 3 amendments that have been approved since adoption of the CDCA Plan in 1980. An additional amendment would be added to this section of the CDCA Plan that would read "Permission granted to construct solar energy facility (proposed MSEP)."

1.5.1.3 Plan Amendment Process

The PA process is outlined in Chapter 7 of the CDCA Plan. In analyzing a potential amendment of the CDCA Plan, the BLM District Manager, Desert District, will:

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment;
2. Determine if alternative locations within the CDCA are available that would meet the applicant's needs without requiring a change in the plan's classification, or an amendment to any plan element;
3. Determine the environmental effects of granting and/or implementing the applicant's request;
4. Consider the economic and social impacts of granting and/or implementing the applicant's request;
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from federal, state, and local government agencies; and
6. Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

1.5.1.4 Decision Criteria for Evaluation of a Plan Amendment

The decision criteria to be used for approval or disapproval of the PA require that the following determinations be made by the BLM Desert District Manager:

1. The proposed PA is in accordance with applicable laws and regulations; and
2. The proposed PA will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM Desert District Manager will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in FLPMA.

1.5.1.5 Decision Criteria for Evaluation of Application

In addition to defining the required analyses and Decision Criteria for Plan Amendments, the CDCA Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

1. Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
2. Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;
4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery systems network;
8. Consider ongoing projects for which decisions have been made; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

1.6 Document Organization

This document follows regulations promulgated by the CEQ for Implementing the Procedural Provisions of NEPA (40 CFR §§1500-1508); the Department of the Interior's NEPA regulations, 43 CFR Part 46; the BLM NEPA Handbook, H-1790-1; FLPMA §§201, 202, and 206 (43 CFR §1600); the BLM Land Use Planning Handbook, H1601-1; and DOE's NEPA implementing procedures (10 CFR §1021). This PA/FEIS describes the components of and reasonable alternatives to the Proposed Action and environmental consequences of the Proposed Action and other alternatives.

The PA/FEIS is organized as follows:

Chapter 1 provides general background on the Proposed Action; identifies the purpose and need for the Proposed Action; and identifies roles of the BLM, other agencies, and authorities regulating various aspects of the Proposed Action.

Chapter 2 describes the Proposed Action and the alternatives development and screening process conducted for the Project. It also presents a range of reasonable alternatives that address the stated purpose and need for the Proposed Action and identifies and explains why other alternatives were considered but not analyzed in detail.

Chapter 3 describes the affected environment (existing conditions) for 23 environmental resource and issue areas relevant to that area that would be affected by the Proposed Action.

Chapter 4 provides a comprehensive analysis and assessment of impacts (direct, indirect, and cumulative) and mitigation measures (by environmental resource and issue area) for the Proposed Action and alternatives (including a No Action Alternative). It also describes other aspects of BLM compliance with NEPA procedures, including including any irreversible or irretrievable commitments of resources (40 CFR §1502.16).

Chapter 5 identifies the persons, groups, agencies, and other governmental bodies that were consulted or that contributed to the preparation of the PA/FEIS; describes Native American consultations and public participation during scoping; provides a list of PA/FEIS preparers; and lists agencies, organizations, and persons to whom the PA/FEIS will be or has been sent.

Chapter 6 includes a list of acronyms and abbreviations used in the PA/FEIS.

Chapter 7 includes a list of Project-specific and environmental terms used in the PA/FEIS.

Chapter 8 identifies the references used in preparing the PA/FEIS.

Appendices contain information that supplements or supports the analyses in the body of the PA/FEIS as well as responses to each of the comments received from members of the public, agencies, and organizations.

1.7 Issues Addressed in the Analysis

The BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the PA/FEIS for the MSEP, as well as the extent to which those issues and impacts would be analyzed in the document. This process is called "scoping" (40 CFR §1501.7). Internal input was provided by the BLM, cooperating agencies, and Riverside County as an interdisciplinary process, to help define issues, alternatives, and data needs. External scoping involved notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public. Formal public scoping began following publication of a Notice of Intent (NOI) to prepare an EIS under NEPA and release of a Notice of Preparation (NOP) of an Environmental Impact Report (EIR) under CEQA.

The NOI for the Proposed Action was published in the Federal Register on August 29, 2011 (76 FR 53693). On September 20, 2011, BLM held a public scoping meeting at the University of California-Riverside, Palm Desert Graduate Center in Palm Desert, California. The NOP was issued on October 3, 2011, and Riverside County held a public scoping meeting on October 19, 2011, in the Blythe City Council Chambers. Comments received during the scoping process about the issues to be addressed in the analysis are provided in Appendix B, *Scoping Report*.

The BLM distributed the Draft PA/EIS for the MSEP for public and agency review and comment on May 25, 2012 (77 Fed. Reg. 31355-02). The 90-day comment period ended on August 23, 2012. Twenty-two comment letters were received. Based on input received, the BLM identified the following resources and issues as continuing areas of interest for this effort: biological resources, including desert tortoise and other special status wildlife species and vegetation; cultural resources, including prehistoric Native American resources; hazards, including fire hazards and hazardous materials; and water resources.

The BLM's consideration of issues and concerns expressed during the public review process and applicant-proposed project revisions resulted in changes to the Draft PA/EIS. For example, with input from the California Department of Fish and Game and others, revisions were made regarding vegetation communities, including Abram's spurge; the analysis of potential project-related impacts associated with increased incidence of canine distemper virus in desert kit foxes; and to clarify that the intermountain valley floor within the solar plant site is unlikely to serve as a potential movement corridor for Nelson's bighorn sheep. Additional discussion of golden eagles was added but did not result in a change to related conclusions. The discussion of archeological resources was supplemented and analysis of cultural landscapes clarified to emphasize that impacts to such landscapes cannot occur until boundaries are formally established. In addition, applicant proposed revisions to the western boundary of the solar plant site would avoid potential wildlife entrapment hazards and provide a wider buffer between the base of the mountains and the project site.Consolidated responses (called "Common Responses") for topics on which a number of similar and related comments were received are provided in Section 5.5.3, an individual response to each individual comment received is provided in Appendix K, and revisions resulting from the BLM's consideration of issues and concerns expressed during the public review process and applicant-proposed project revisions are reflected throughout the PA/FEIS.

1.8 Permits and Approvals

Review and approval of the Proposed Action is within the primary jurisdiction of the BLM for those portions of the Proposed Action that would be constructed, operated, maintained, and decommissioned on BLM-administered public land, and within the County's primary land use jurisdiction for those portions of the Proposed Action that would be developed and operated on privately owned or County-owned land within its jurisdiction. The BLM may issue a ROD making a decision regarding the issuance of the ROW grant for the portions of the Proposed Action on public land. The County may issue the CUP and/or PUP for the portions on private land and County-owned land. Other federal, state, and local agencies also could exercise authority over specific elements of the Proposed Action with respect to land use, biological and cultural resources, stormwater drainage and hydrology issues, roadway easements, and crossing encroachments.

CHAPTER 2
Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Applicant's proposal to construct, operate, maintain, and decommission an up to 750 MW solar PV energy generating facility and related infrastructure in unincorporated Riverside County, California, to be known as the McCoy Solar Energy Project (MSEP or Project) on a combination of public land administered by the BLM, private land, and land owned by the County. This chapter also describes alternatives to the MSEP, including a reduced acreage alternative that would support a 250 MW solar PV facility, two alternative routes to connect the facility to the regional electrical power grid, and a No Action Alternative as required by NEPA. The two Plan Amendment-only alternatives with no project/ROW grant component that were considered in the Draft PA/EIS have not been carried forward in the PA/FEIS for the reasons explained in Section ES.3.1. Each of the action alternatives evaluated in the PA/FEIS would require amendment of the CDCA Plan (BLM, 1980) for the reasons described in Chapter 1 (see, e.g., Section 1.2.1, p. 1-2; and Section 1.5.1, p. 1-5). The Project and CDCA Plan Amendment collectively are referred to in this document as the "Proposed Action." Finally, this chapter also describes the alternatives screening process, including alternatives that were considered but eliminated from detailed analysis. For the reasons described in Section 2.8, below, the BLM has identified Alternative 1, the Proposed Action, as the Agency Preferred Alternative, with the exception of the proposed gen-tie line, for which the Alternative 3 Central Route is preferred.

2.2 Alternatives Development and Screening

Alternatives were evaluated using the criteria set forth in Section 6.6.3 of the BLM NEPA Handbook, which provides that an action alternative may be eliminated from detailed analysis if:

1. It is ineffective (it would not respond to the BLM's purpose and need
2. It is technically or economically infeasible
3. It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the land use plan LUP (i.e., the CDCA Plan)
4. Its implementation is remote or speculative
5. It is substantially similar in design to an alternative that is analyzed
6. It would have substantially similar effects to an alternative that is analyzed

The Project, Reduced Acreage Alternative, and Reconfigured Gen-tie/Access Road Alternatives (each of which is described in Section 2.3) met all of the criteria listed above and were carried forward for more detailed analysis in Chapter 4. The No Action Alternative is described in Section 2.7, the Agency Preferred Alternative is described in Section 2.8, and potential alternatives that did not meet the criteria and were eliminated from further analysis are described in Section 2.9.

2.2.1 Proposed Land Use Plan Amendment Decisions

The Applicant has applied for a ROW grant and did not directly request an amendment of the CDCA Plan. Nonetheless, the BLM has determined that a CDCA Plan amendment would be required if a ROW were granted for a solar power generating facility on the proposed site.

Of the four Plan Amendment decisions considered in the Draft PA/EIS, the following two have been carried forward in this PA/FEIS:

> **PA1:** The CDCA Plan would be amended to identify the development footprint as suitable for the proposed type of solar energy use. (This would be adopted if a ROW were granted for the Project or the Reconfigured Gen-tie/Access Road Alternative).
>
> **PA2:** The CDCA Plan would not be amended. (This would result if the No Action Alternative were selected).

Neither PA3 nor PA4, which would have resulted in denial of the requested ROW and amendment of the CDCA Plan to identify the ROW application area as suitable or unsuitable (respectively) for solar energy development. With publication of the Solar PEIS ROD, a decision has been made to identify the MSEP ROW application area as part of the Riverside East SEZ and thus, suitable for solar development. Therefore, this PA/FEIS does not consider the land use planning questions associated with PA3 and PA4.

The Final Solar PEIS and ROD recognize the MSEP as a “pending” ROW application (Final Solar PEIS §9.4.22.2, p. 9.4-133). Pending applications like the MSEP are not subject to the Solar PEIS ROD (Solar PEIS ROD Section B.1.2) or to the CDCA Plan amendments made in that decision. Therefore, if the BLM elects to approve the ROW grant application for the MSEP, the a project-specific CDCA Plan amendment summarized in PA1 would be required.

2.3 Action Alternatives, Including the Proposed Action

This section first describes features common to all action alternatives, and then describes the distinguishing features specific to the Proposed Action, Reduced Acreage Alternative, and Reconfigured Gen-tie/Access Road Alternative. Each action alternative consists of two main components associated with generating and delivering electricity: the solar plant and the gen-tie line that would interconnect to the CRS, which is a 500/230-kilovolt (kV) substation currently under construction that will be owned and operated by SCE and is not a part of the Project.[1] As explained in more detail below, the Project would consist of solar plant Unit 1, solar plant Unit 2,

[1] The CRS is not a part of the MSEP because it will be constructed and operated by SCE to serve numerous power generation facilities. SCE received a Permit to Construct the CRS from the California Public Utilities Commission (CPUC) on July 14, 2011, and the BLM issued a ROD covering the CRS on July 13, 2011. SCE commenced construction in the third quarter of 2011. The facility is expected to be in service in 2013. Once operational, the CRS will be a full 2240 megavolt-ampere 500/230 kV substation occupying approximately 90 acres of land.

and a gen-tie line along the Eastern Route. The Reduced Acreage Alternative would consist of solar plant Unit 1 and any of the gen-tie line routes (i.e., the proposed Eastern Route or either the Central Route or Western Route under Alternative 3).

2.3.1 Features Common to All Action Alternatives

This section details the Project components that would be developed if any of the action alternatives were approved, regardless of the particular solar plant layout or gen-tie line route selected. Distinctions specific to each action alternative are detailed in Section 2.3.2, relating to the Proposed Action; in Section 2.3.3 relating to the Reduced Acreage Alternative; and in Section 2.3.4, relating to the Reconfigured Gen-tie/Access Road Alternative.

2.3.1.1 Overview

The Applicant proposes to construct, operate, maintain, and decommission the MSEP in a location approximately 13 miles northwest of the City of Blythe, California, 32 miles east of Desert Center, and 6 miles north of I-10. The MSEP solar plant site would be developed on approximately 3,960 acres of public land administered by the BLM and on approximately 477 acres of private land subject to the County's land use jurisdiction (McCoy Solar LLC, 2011b). See Figure 2-1 and Figure 2-2.

The Applicant provided technical information about the Project components described in this section. All numbers, including those referring to land disturbance, equipment, schedule, mileage, and workforce, are based on the most current data available and generally represent conservative estimates for purposes of analyzing impacts. The numbers may change based on final engineering and various agencies' permit requirements. The Applicant provided current information about the MSEP on November 21, 2011 (McCoy Solar LLC, 2011a); in the revised draft Plan of Development (POD) for the MSEP submitted to the BLM in August 2011 (Tetra Tech EC, Inc., 2011a); and in CUP and PUP applications submitted to the County in May and October, 2011 (NextEra Energy Resources LLC, 2011 and McCoy Solar LLC, 2011b, respectively). Supplementary information has been provided in response to requests for additional data and clarifications of previously provided information. Based on this input, key components of the Project are:

1. The solar plant site, i.e., all facilities that create a footprint in and around the field of solar panels, including: the solar field (consisting of up to two solar power plants identified as Unit 1 and Unit 2), up to two on-site substations (the Unit 1 and Unit 2 substations), an operations and maintenance (O&M) facility to be shared by Unit 1 and Unit 2 (if constructed); and related infrastructure and improvements;
2. A double-circuit, overhead 230 kV gen-tie line;
3. A 230 kV switchyard located near the CRS;
4. Two telecommunications lines;
5. An SCE-owned and operated distribution line; and
6. An access road providing access to the solar plant site.

Key components of the Project are shown in Figure 2-2. The Project would operate year-round, and would generate electricity during daylight hours when electricity demand is at its peak. The MSEP would generate and deliver solar-generated power to the regional electrical grid through an interconnection at the CRS.

To initiate the environmental review process under NEPA, the Applicant submitted a SF-299 requesting a ROW grant (Application CACA-048728) from the BLM for the portion of the Project that would be developed on BLM-administered land.[2] If a ROW grant is approved for the MSEP, then a land use plan amendment also would be required to identify the site in the CDCA Plan as an appropriate site for the proposed use. The CDCA Plan amendment also would require analysis of proposed impacts under NEPA. The BLM is the lead agency for the purposes of NEPA.

2.3.1.2 Project Location and Existing Land Use

The proposed solar plant site is located in a rural area of the Sonoran Desert in unincorporated Riverside County, primarily on BLM-administered land. It is located approximately 13 miles northwest of the town of Blythe, California, approximately 32 miles east of the town of Desert Center, California, and approximately 6 miles north of I-10. It is south of McCoy Wash, east of the McCoy Mountains, and north of the Blythe Airport. The Project would be developed in the Mojave Desert Air Basin and over the Palo Verde Mesa Groundwater Basin.

The MSEP is proposed on a site located adjacent to (and immediately north of) the Blythe Solar Power Project (BSPP) and adjacent to (and immediately south of) the BLM ROW application filed under the name enXco McCoy (enXco Project).[3] The land in the vicinity of the site is primarily agricultural and vacant to the east, and vacant with mountains to the west.

Solar plant site access would be via the Mesa Drive/Airport exit from I-10 by heading west onto Black Rock Road. Approximately 1.5 miles west of Mesa Drive along Black Rock Road, an existing, unimproved access road installed by the BSPP from Black Rock Road to a point just south of the southern edge of the MSEP solar plant site boundary would be improved as part of the Project. The Applicant would use this north/south access road for at least 2 miles, then veer to the east.

The proposed MSEP site is located in Sections or portions of Sections 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36, Township 5S, Range 21E. For purposes of administration and planning, the proposed site is within the BLM's California Desert District and within the planning boundaries of the CDCA Plan, which is the applicable Resource Management Plan (RMP) for the Project site and the surrounding areas. The site bears the CDCA Plan land use classification of "Class L" or

[2] The Applicant's initial CACA-048728 application was filed on January 29, 2007, for 20,480 acres. It later was modified by a letter on January 15, 2008, to reduce the requested ROW size by 9,920 acres to 10,560 acres. By letter of July 15, 2010, the Applicant requested that an additional 3,040 acres be removed from the requested ROW area to reflect the current approximately 7,700-acre ROW application area. On December 1, 2011, the Applicant filed an amended SF-299 to include land needed for linear facilities such as the gen-tie and access roads.

[3] The BLM approved the ROW for the BSPP in November 2010. The project commenced construction but was placed on hold in August 2011 pending permit revisions (BLM, 2011d). Construction of the BSPP remains on hold as of the drafting of the MSEP PA/FEIS. enXco filed a POD for the enXco McCoy Project with the BLM in February, 2009.

limited use. Solar energy facilities are permitted in Class L areas provided NEPA is complied with and the CDCA Plan amendment process is followed. The site also lies within the planning boundaries of the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan. There are no Wilderness Areas, Areas of Critical Environmental Concern (ACECs), Desert Wildlife Management Areas (DWMAs), or Wildlife Habitat Management Areas (WHMAs) within or adjacent to the solar plant site. There are 1,089 acres of lands with wilderness characteristics within Unit 2 of the Project site.

The privately owned parcels consist of Assessor's Parcel Numbers 812-130-006, 812-130-007-4, and 812-130-008-5. McCoy Solar LLC has made agreements with these private land owners to purchase the private land which would be used as a part of the MSEP.

The proposed gen-tie line, estimated to be approximately 12.5 to 15.5 miles long depending on the route alternative implemented (including approximately 2 miles within the solar plant site boundary), would be parallel to the BSPP gen-tie line for nearly half of the length: the two transmission lines are expected to be between 50 and 100 feet apart (see Figure 2-2). The MSEP gen-tie line is expected to permanently occupy a legal ROW corridor of approximately 140 to 180 acres outside of the MSEP solar plant site boundary. This acreage is based on a distance of 10.5 to 13.5 miles from the solar plant site boundary to the CRS with an average width of 100 feet (50 feet on either side of the line).

The solar plant site also is located approximately 4 miles northwest of the Blythe Airport, which is an active Riverside County airport. At its closest, the proposed gen-tie line would be located approximately 1.5 miles from the airport. The Applicant would submit a "Notice of Proposed Construction and Alteration" (Form 7460) to the Federal Aviation Administration (FAA) consistent with the advance notice requirement contained in FAA regulations.

2.3.1.3 Project Facilities

The MSEP would be constructed in up to two units. Unit 1 is expected to have a 250 MW capacity comprising an estimated 125 complete or equivalent partial 2 MW blocks. Unit 2 would have an up to 500 MW capacity consisting of up to 250 complete or equivalent partial 2 MW blocks. The construction of Unit 1 would include the access road, water treatment system, initial gen-tie line (consisting of the support towers and first circuit), O&M building, parking area, and the first 125 complete or equivalent partial 2 MW blocks. Proposed facilities on private and County-owned land would be limited to solar arrays and inverters, and a portion of the access road, gen-tie line, distribution line, and telecommunication line. Of the total Project, approximately 46 MW is expected to be developed on the private land.

Unit 1 would be arranged on the eastern side of the solar plant site; Unit 2 would be located west of Unit 1 within the solar plant site. Construction of Unit 2 would begin after the completion of Unit 1. Linear facilities extending out of the solar plant site would include the main access road, gen-tie line, switchyard, telecommunication lines, and distribution line. The approximate disturbance acreage associated with each proposed land use is provided in Table 2-1. The acreages in Table 2-1 are based on a thin film cadmium telluride (CdTe) PV panel using a single-axis tracker for Unit 1 and fixed tilt ground mount for Unit 2 (see Figure 2-3).

TABLE 2-1
ESTIMATED LAND DISTURBANCE ACREAGE FOR THE MCCOY SOLAR ENERGY PROJECT

Solar Plant Site	**Unit 1 (Ac)[a]**	**Unit 2 (Ac)[a]**
Solar Field (includes all acreage within the solar plant site covered by the solar panels and trackers, the inverter pad areas, the maintenance roads between the solar arrays, any engineered drainage features and the gen-tie line area within the solar plant)	2,186.3	2,041.0
Perimeter / Fence Maintenance Road (assumes 24 ft wide, approximately 8.5 miles for Unit 1 and 6.5 miles for Unit 2 within solar plant site fence)	23.3	18.7
Fence Maintenance Road / Access Corridors (varies in width, approximately 13 miles outside solar plant site fence)	33.3	19.5
On-site Substations	2.8	2.8
Shared Water Treatment Area	3.0	0.0
Shared O&M Building (approximately 3,000 square ft) and Parking Area (approximately 10,000 square ft)	0.3	0.0
Main Access Road within solar plant site boundary (assumes improved, 24 ft wide with 3 ft shoulders, approximately 1.25 miles up to Unit 1 and 1.5 miles between Unit 1 and 2)	10.0	0.0
Unit Subtotal for Solar Plant Site Permanent Disturbed Acreage	***2,259***	***2,082***
Total On-site Permanent Disturbed Acreage	**4,341**	
Temporary Laydown Area, Unit 1/Unit 2 (converted to permanent solar field area at end of construction)[b]	15.0[b]	13.0[b]
Area in and around natural drainages that will remain ungraded	0.0	96.0[c]
Subtotal for Acreage within Solar Plant Site Fence	***2,259***	***2,178***
Total Acreage Within Solar Plant Site Fence	**4,437**	
Linear Facilities Outside Solar Plant Site Boundary	**Permanent (Ac)**	**Temporary (Ac)**
Main Access Road outside of the solar plant site boundary (assumes improved, 24 ft wide road with 3 ft shoulders, 50 ft wide temporary disturbance, approximately 5.5 miles, not including already disturbed access road)[d]	20.0	13.3
Gen-tie Support Poles (assumes 57 monopoles and 52 H-frame poles to be spaced about 800 ft apart, each foundation requiring 50 ft by 50 ft temporary disturbance and 12 ft by 12 ft permanent disturbance)[e]	0.5	8.7
Gen-tie line Maintenance Road (assumes 24 ft wide with 3 ft shoulders, 50 ft wide temporary disturbance, approximately 7.75 miles (approximately 5.5 miles access is provided by the Main Access Road), assumes the BSPP gen-tie line access road would be shared along the length of the MSEP gen-tie line that parallels the BSPP gen-tie line)[d]	28.2	18.8
Gen-tie line Spur Roads (assumes 15 ft wide permanent disturbance, 50 ft wide temporary disturbance, 26 spur roads 220 ft long near airport, 24 spur roads 100 ft long near CRS, no spur roads assumed along main access road north of the BSPP gen-tie line crossing)	2.8	6.5
Gen-tie line Construction Laydown/Assembly Areas	0.0	3.0
String Pulling Sites (assumes 54 pulling sites 100 ft by 300 ft, not including pole disturbances listed previously)	0.0	34.5
Switchyard adjacent to CRS	2.0	0.0
Telecommunications Lines	0.0	0.0

TABLE 2-1 (Continued)
ESTIMATED LAND DISTURBANCE ACREAGE FOR THE MCCOY SOLAR ENERGY PROJECT

Linear Facilities Outside Solar Plant Site Boundary (cont.)	Permanent (Ac)	Temporary (Ac)
Distribution Line Poles (assumes 135 poles to be spaced about 150 ft apart, each requiring 25 ft by 25 ft temporary disturbance and 3 ft by 3 ft permanent disturbance)	0.0	1.9
Distribution Line Spur Roads (assumes 135 spur roads corresponding to every pole, 12 ft wide and approximately 50 ft long)[e]	1.9	0.0
Distribution Line Maintenance Road (assumes 24 ft wide with 3 ft shoulders, 1.0 miles (approximately 3 miles access is provided by the Main Access Road)	3.6	0
Subtotal for Linear Facilities Outside of Solar Plant Site Disturbed Acreage	***59***	***87***
Total for Linear Facilities Outside of Solar Plant Site	**146**	
Total Solar Plant Site and Linear Facility Permanent Disturbed Acreage	**4,496**	
Total Solar Plant Site (Within Fence) and Linear Facilities Acreage (Temporary and Permanent)	**4,583**	

NOTES:

[a] These acreages are based on the thin film tracking configuration as shown in **Figure 2-3**.
[b] These acreages are not included in totals because area is within land that would be affected by other solar plant site facilities.
[c] The 96 acres in and around drainages within Unit 2 would remain undisturbed; however, because this area currently is shown within the fence of Unit 2, it is considered permanently disturbed for purposes of Chapter 4's analysis of impacts to biological resources.
[d] Disturbance may be accounted for in disturbance road acreage of other projects and may be removed at a later date.
[e] The temporary disturbance for gen-tie line and distribution line poles does not include the permanent disturbance or the portion of the spur road that would be coincident with the pole construction area.

SOURCES: McCoy Solar LLC 2012a

The design and operation of proposed facilities are described in detail below. The proposed overall site layout is shown in Figure 2-3.

2.3.1.3.1 Solar Panel Arrays and Support Structures

The MSEP would convert sunlight into direct current (DC) electrical energy within PV modules (also referred to as "panels"). PV modules can be mounted together in different configurations (also referred to "arrays") depending on the equipment selected. MSEP arrays primarily would be organized into 2 MW blocks, with some additional arrays configured in 1 MW or 0.5 MW blocks to utilize land space efficiently. Although the acreage of each block would depend on the technology, spacing, mounting equipment, and other design criteria subject to change in detailed engineering, each block is expected to cover approximately 15 acres. Unit 1 would cover approximately 2,259 acres; Unit 2 would cover the remainder of the approximately 4,437-acre solar plant site. Each block would consist of PV modules and a power conversion station (PCS) that includes inverters and transformers to convert the DC electricity to alternating current (AC) electricity for transmission across the grid. Figure 2-4 shows an example of a PV array, and Figure 2-5 depicts a typical block configuration using thin film (CdTe) panels on tracking units.

The arrays and PCS would be accessible by two access corridors, one in a north-south direction every third block (approximately 3,000 feet) of nominal 24-foot width and the other in an east-west alignment passing every PCS unit of nominal 16-foot width. These access corridors would consist of unpaved compacted road base and would be used only as necessary during operation and maintenance activities.

The blocks of solar arrays proposed by the MSEP would be configured in two solar fields, i.e., Unit 1 and Unit 2. Unit 1 would produce 250 MW. Unit 2 would produce between 250 and 500 MW, for a potential combined total of up to 750 MW. Solar energy technologies are continuing to advance at a rapid rate, and the Applicant is continuing to evaluate the evolving benefits of various options at this time. Each option is described below, and the associated impacts are evaluated in this PA/FEIS. In this way, the best information available during final design can inform decisions about the exact technology, arrangement and nature of the PV system to be used for the MSEP.

Different materials display different energy generation efficiencies; higher efficiency panels produce more electricity per given area, but generally cost more per panel area. Materials commonly used for PV solar cells include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride, and copper indium selenide/sulfide. Several of the PV cells currently available are manufactured from bulk materials that are cut into very thin wafers, i.e., between 180 to 240 micrometers thick. Others are constructed from thin-film layers. The Applicant is considering the installation of both polycrystalline and cadmium telluride solar cells. Both technologies are proven and viable for utility-scale PV plants. Characteristics of typical panels are given in Table 2-2.

TABLE 2-2
TYPICAL PV PANEL CHARACTERISTICS

Typical Panel Physical and Electrical Characteristics	Thin Film (CdTe) (First Solar FS Series 3)	Polycrystalline (Yingli Solar YGE 280 Series)
Length	1.2 m	1.9 m
Width	0.6 m	0.99 m
Weight	12 kg	26.8 kg
Cell Type	CdS/CdTe semiconductor, 154 active cells	72 multicrystalline
Frame Material	None	Anodized aluminum alloy, silver, clear
Cover Type	3.2 mm heat strengthened front glass laminated to 3.2mm tempered black glass	Low-iron tempered glass
Nominal Power	85 W	290 W
Efficiency	~12%	~15%
Voltage at Pmax	48.5 V	35.8 V
Current at Pmax	1.76 A	8.10 A
Open Circuit Voltage	61.0 V	45.3 V
Short Circuit Current	1.98 A	8.62 A
Maximum System Voltage	1000 V DC	1000 V DC
Temperature Coefficient of Pmpp	-0.25%/°C	-0.45%/°C

SOURCE: McCoy Solar LLC, 2011a

Solar Panels

The system would incorporate high-efficiency commercially available solar PV panels that are Underwriters Laboratory (UL)-listed or approved by another nationally recognized testing laboratory. By design, the solar PV panels would absorb sunlight to maximize electrical output and use anti-reflective glass. Due to the limited rotation angles, the solar PV panels have no potential for reflecting the sun's rays upon any ground-based observer off-site. These panels would be protected from impact by tempered glass, and would have factory applied ultraviolet (UV) and weather-resistant "quick connect" wire connectors.

A CdTe solar panel uses solar cells constructed in a thin semiconductor layer (also known as a "thin film") to absorb and convert sunlight into electricity. The Applicant is considering the use of thin film CdTe panels as one of its technology options. If thin film CdTe panels are used, the Applicant would ensure that the vendor offers a PV module recycling program through which any module may be returned for recycling.

Silicon is the traditional material choice for PV solar cells, and the Applicant is considering polycrystalline silicon PV modules for use at the MSEP.

Support and Mounting Structures

The Applicant plans to use either a single-axis tracking system or a fixed tilt ground mount for the structures that support the PV modules. Figure 2-4 shows examples of a PV single-axis tracker and a fixed tilt ground mount.

Either of two types of single-axis tracker systems could be selected for the MSEP. Tracker Option 1 is a "ganged system" that would use one motor to control multiple rows of PV modules through a series of mechanical linkages and gearboxes. By comparison, Tracker Option 2, a stand-alone tracker system, would use a single motor and gearbox for each row of PV modules. A single-axis tracking system optimizes production by rotating the panels to follow the path of the sun throughout the day. The central axis of the tracking structure is oriented north to south and is constructed to rotate the panels east to west while limiting self shading between rows. Each tracker holds 30 to 50 PV modules mounted on a metal framework structure. The steel structure would be able to withstand high-wind conditions (up to 90 miles per hour (mph)), site-specific wind gust and aerodynamic pressure effects, and seismic events.

The drive unit typically consists of a bi-directional AC motor or a hydraulic system utilizing biodegradable fluid. The drive unit would be connected to an industrial-grade variable-frequency drive that translates commands from the control computer.

The tracker controller is a self-contained industrial-grade control computer that would incorporate all of the software needed to operate the system. The controller would include a liquid crystal display monitor that displays a combination of calibration parameters and status values, providing field personnel with a user-friendly configuration and diagnostic interface. The monitor would enable field adjustment, calibration, and testing.

A fixed-tilt ground mount system, also being considered by the Applicant, orients the panels in a permanent “fixed” position towards the south at approximately 30 degrees to optimize production throughout the year without any mechanical movement. These racks are simple, open “table” constructions manufactured into a metal framework.

Both trackers and fixed-tilt mounting systems are supported by steel posts spaced at approximately 10 feet apart and installed in a variety of ways. The most prevalent foundation design uses pile driven posts inserted into the ground to a typical depth of 4 to 7 feet below grade. Other foundation options include, but are not limited to, screw piles, grouted steel piles, and concrete foundations. The choice of foundation design is dependent on geotechnical information about the soil and the mounting structural design. Once mounted on a foundation, the bottom of each solar module array would be approximately 1.5 to 2 feet above ground at a minimum, while the top would be at approximately 6 to 10 feet above grade at a maximum. As the solar modules move throughout the day for the tracking option, these heights would vary slightly during the course of a typical day.

The spacing between the rows of tracking units or fixed mounts is dependent on site-specific features and would be identified in the final design. The configuration in Figure 2-5 shows the spacing at approximately 34 feet between rows (post to post), which allows at least 20 feet of clearance for maintenance vehicles and panel access.

2.3.1.3.2 Solar Field DC Distribution and Power Conversion

DC Distribution

The PV modules would be electrically connected in series by wire harnesses that conduct DC electricity to combiner boxes. Each combiner box would collect power from several rows of modules and feed a PCS via cables placed in covered underground trenches (or within above ground cable trays or conduits in limited circumstances where underground trenching is determined not to be practical) as detailed in Figure 2-5. The DC trenches would be approximately 3 feet deep and from 1.5 to 2.5 feet wide. The bottom of each trench would be filled with clean fill surrounding the DC cables and the remainder of the trench would be back-filled with native soil and compacted to 90 percent (95 percent when crossing under roadways). Power screeners could be used on site for a limited period of time (less than 1 year) to extract the required clean fill from native soils for use as bedding material in the trenches. A power screener is a motorized piece of equipment that uses moving screens to filter soils to a particular granularity. Use of this equipment is assumed in the air quality analysis (see Section 4.2, *Air Quality*).

Each PCS comprises an inverter package consisting of multiple inverters connected to adjacent transformers. An overhead shade would cover the inverters or a common equipment enclosure would include multiple inverters. The individual inverter packages would be approximately 7 feet tall, and the transformer exterior to the enclosure would be approximately 6.5 feet tall as shown in Figure 2-6. The overhead shade would be 10 to 12 feet tall. The equipment enclosure, if utilized, would be up to approximately 35 feet long by 10 feet wide by 10 feet tall. In the PCS, the inverters would change the DC output from the combiner boxes to AC electricity. Integrated with the inverter, a data acquisition system (DAS) would utilize a data logger and sensors to record

AC power output. Other integrated components would include equipment to record weather conditions, including ambient temperature measured in degrees Celsius (°C), incoming solar radiation measured in watts per square meter (W/m^2), and wind speed measured in meters per second (m/s). The DAS would enable system data transfer and performance monitoring via the proposed O&M facility.

The resulting AC current from each individual inverter would be routed through underground AC cables (or within above ground conduits in limited circumstances where underground trenching is determined not to be practical) to an oil-filled, medium voltage, step-up transformer positioned within secondary containment. Based on preliminary design, the 265 volt output from an inverter would be stepped up (increased) to the desired substation feed voltage of 34.5 kV by the transformer. The medium-voltage transformer would be placed on a pre-cast concrete pad delivered by flatbed truck during construction. The medium voltage collection circuits would be installed underground to the Unit 1 and Unit 2 substations in trenches that would be approximately 3 feet deep with pole-mounted above-ground circuits possible on the final “home runs” to the substations. The medium voltage cabling would create multiple collection circuits that would carry the electricity from the solar field to the unit’s substation.

AC Collection

Multiple PCS blocks (approximately 10 MW total) would form a lateral configuration and transmit the AC power at 34.5 kV via aboveground double circuit monopoles or underground lines in covered trenches (or within above ground conduits in limited circumstances where underground trenching is determined not to be practical). Approximately three laterals would be combined into an aboveground or underground feeder line (24 to 26 MW) that would transmit the AC power to the Power Distribution Center (PDC) at each substation. As applicable, AC trenches would be approximately 3 feet deep and from 8 inches to 6.5 feet wide and also would be used to house fiber optic cables for communication. The bottoms of the trenches would be filled with sand surrounding the fiber optic cables, and the remainder of the trench would be back-filled with native soil and compacted.

Each of the two Units would have a substation that combines all the AC power from the feeders within the respective Unit. An elevation view of the substation is shown in Figure 2-8. Each substation facility would be located in an approximately 7-acre fenced area as shown in Figure 2-7. Access to each substation would be provided by the main 24-foot-wide paved access road from the improved and extended BSPP access road.

Each substation would consist of parallel sets of internal power distribution systems, including 34.5 kV buses and circuit breakers, disconnect switches, and main step-up transformers. Shield wires and lightning arrestors would be included to protect the substation equipment and personnel against lightning strikes.

2.3.1.3.3 Generation Transmission Line

In the substation of each Unit, the voltage would be stepped up to 230 kV to match the voltage of the gen-tie line that would interconnect Project generation output with the CRS. The gen-tie line generally would use a single set of support towers and a separate circuit for each Unit, resulting in a total of up to two transmission circuits from the MSEP to the CRS. The Unit 1 circuit would connect to the electrical grid via a 230 kV switchyard located near SCE's CRS, where the power for that circuit would be merged (as required by the Applicant's Interconnection Agreement with SCE) with the power from the Genesis Solar Energy Project (GSEP) before being connected to the CRS.

As part of the construction for Unit 2, if constructed, the second circuit would be added to the then existing MSEP gen-tie structures or on new structures in height restricted areas, and follow the same gen-tie line corridor from the Project's Unit 1 substation to the CRS. The circuit from Unit 2 would be routed directly to the CRS rather than through the MSEP/GSEP switchyard.

The MSEP gen-tie line route would extend south from the solar plant site along the eastern and south-eastern border of the BSPP site as proposed, or if a different route alternative is selected, either through the center of the BSPP site or along the western border of the BSPP site before turning south to cross the I-10 and west toward the CRS south of I-10 as shown on Figure 2-2. The MSEP gen-tie line routes are estimated to be approximately 12.5 to 15.5 miles long, including approximately 2 miles within the solar plant site boundary.

The first half of the route exiting the MSEP would consist of all transmission lines strung on a single pole. The gen-tie monopole structures would be designed for double circuit use, with the first circuit (from Unit 1) being strung during the gen-tie line construction. As the gen-tie line nears the Blythe Airport and an FAA navigation beacon south of I-10, the two circuits could be carried on H-frame structures or on individual monopoles, as necessary, to maintain height requirements. The gen-tie support towers would be approximately 70 to 145 feet tall, depending on the location and local terrain, with final heights determined during detailed design. Typical double-circuit 230 kV monopoles designed with a vertical string configuration are shown in Figure 2-8. The final transmission tower design including tangent, angle, dead end, and pull-off structures and associated hardware would be determined during the final engineering of the proposed interconnection. The towers would be reinforced as necessary to withstand design loads.

Typical spacing between monopole or H-frame structures would be approximately 800 to 1,000 feet along the route. Concrete or self-weathering steel would be used for the poles and/or H-frames. Self-weathering steel is composed of a special alloy that forms a protective coating over time and inhibits corrosion. The finish appears as a matte patina and commonly is used in areas where a shiny appearance would be undesirable. All towers and poles would be designed to be avian-safe in accordance with the *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (APLIC, 2006). The transmission lines would be insulated from the poles using porcelain insulators engineered for safe and reliable operation. Shield wires would be included along the length of the transmission lines to protect against lightning strikes.

Based on the Project requirements, access, terrain, and available geotechnical information, it is expected that direct embedded foundations would be used for tangent structures and anchor bolted, drilled shaft foundations for angle and dead-end structures. Vibrated casing foundations also may be used, depending on the results of planned further geotechnical investigation. A geotechnical investigation for the gen-tie line route would be completed before final design and construction of the Project.

2.3.1.3.4 Plant Communications and Proposed Telecommunication Lines (Fiber Optic Cable)

A Supervisory Control and Data Acquisition (SCADA) system would be included for remote control and monitoring of inverters, trackers, and other equipment within the MSEP.

New telecommunications lines would connect the MSEP substations with the electrical grid through the CRS. As required for connection and interaction with the electrical grid, two independent telecommunication lines would be provided. The primary telecommunication line would be hung at the top of the gen-tie support structures (i.e., towers) during the gen-tie line construction for Unit 1. The secondary telecommunication line would be located within the disturbance area of the access or maintenance roads[4] and could be installed during construction of either unit.

2.3.1.3.5 Colorado River Substation Switchyard

The proposed Unit 1 transmission line circuit of the solar plant would tie into the CRS via a switchyard located adjacent to the CRS. This switchyard would consist of three 230kV, 1200A circuit breakers on a low profile ring bus configuration. The switchyard would allow for the Unit 1 gen-tie line to be merged with the GSEP gen-tie line so that the power from both the GSEP and MSEP Unit 1 could enter the CRS as a single circuit in accordance with the Applicant's interconnection agreement with SCE. The line from the switchyard to connect to the CRS would be less than 100 feet long.

The switchyard would occupy an approximately 2-acre fenced area with the southern fence line of the switchyard located approximately 25 feet from the northern fence line of the CRS. Once operational, the switchyard would be accessible only to authorized personnel and contractors. It would contain parallel sets of internal power distribution systems, including buses and circuit breakers that would act as protective relays, disconnect switches, and main step-up transformers. The location of the proposed switchyard is shown on Figure 2-2.

2.3.1.3.6 Operation and Maintenance Building

The MSEP would include an approximately 3,000-square-foot O&M building located on BLM-administered land on the eastern side of the solar plant site, adjacent to the proposed 24-foot-wide access road and main gate, and shared for services to Units 1 and 2. The building would provide an administration area, a work area for performing minor repairs, and a storage area for spare parts, transformer oil, and other incidental chemicals. The administration area would be air conditioned and include offices, conference rooms, a break room, rest rooms, and locker rooms with showers.

The building would be supported on reinforced concrete mat foundations or individual spread footings as determined during detailed design. Excavation for the footings would be approximately 2 feet deep. Excavation within the perimeter of the building would be approximately 1 foot deep. An aggregate or stone base would be laid after excavation. The floor would consist of a 6-inch reinforced concrete slab. Concrete for this slab would come from Blythe. A typical O&M building plan is shown in Figure 2-7 and an elevation view in Figure 2-8.

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[4] For purposes of the analysis in Chapter 4, all references to the gen-tie line and access road route include potential effects from construction, operation, maintenance and decommissioning of the telecommunication lines.

The O&M building would be a pre-engineered metal building approximately 17 feet high at its peak with a neutral-colored metal siding and roof to minimize visual impact. The building's maintenance area would include roll-up doors to provide equipment access as well as personnel access doors.

The proposed SCE distribution line would provide electrical service to the O&M building. Telecommunications would be provided by a new fiber optic line constructed at the same time as the distribution line. Sanitary waste would be disposed through the septic system described in Section 2.3.1.4.10.

An approximately 10,000-square-foot parking area would be provided at the O&M building. The location of the proposed O&M building and parking area is shown on Figure 2-7.

2.3.1.3.7 Other Site Improvements

Weather Station

One or more permanent meteorological stations would be installed at the solar plant site to track weather patterns. Figure 2-9 depicts a typical meteorological station. The meteorological station(s) would be attached to the DAS to collect data for analysis and system monitoring.

Temporary Laydown Area

An approximately 15-acre temporary laydown area (approximately 970 feet by 685 feet) would be located within the footprint of Unit 1 to support the construction of Unit 1. This area would accommodate 15 to 20 office trailers connected to power through a temporary on-site generator or the proposed SCE distribution line for contractor accommodations during construction. The laydown area would be used for the storage of construction tools and equipment, materials such as cement, gravel, wire, cable, and solar field equipment, and would contain a staging area for pre-assembly of the solar field components. The laydown area also would contain construction worker parking and ample space for vehicle turn-around.

The Unit 2 temporary laydown area would be located west of Unit 1 most likely near the Unit 2 substation location. Access would be through the Unit 2 substation area from the 50-foot wide corridor with 24-foot-wide paved road that connects the two site substations. This laydown area would occupy approximately 13 acres (1,000 feet by 650 feet) and would contain the same types of trailers, equipment storage, parking, and staging areas as the Unit 1 laydown area. It is anticipated that the Unit 2 laydown area would require less space than the Unit 1 laydown area because there would be no need to construct an additional operations area. Construction power for the Unit 2 laydown would be provided by local distribution power or a temporary portable generator.

Temporary bollards would control access to a 50-foot by 100-foot area. These would consist of vertical poles embedded in the ground around the area and back-filled with native soil. The estimated depth of ground disturbance for pole embedment is up to 1.5 feet deep by up to a 12-inch diameter.

Gen-tie Line Temporary Laydown Area

One additional approximately 3-acre laydown area would be required for construction of the gen-tie line. An already disturbed area (e.g., gen-tie line maintenance or spur road) would be used for this purpose, the location of which would be determined at the onset of the gen-tie line construction.

Construction materials such as wire and cable, fuels, and small tools, and consumables would be delivered to the gen-tie line laydown area by truck. The laydown area also would contain construction worker parking, a staging area, and mobile/modular trailers or similar suitable facilities for construction contractor offices.

Access Roads

Access roads would be developed for ingress and egress, and between the solar array rows to facilitate installation, maintenance, and cleaning of the solar panels. Locations of the proposed access roads are shown in the site plan (Figure 2-3). During decommissioning of the facility, the same access roads would be used to remove facility components.

Main Access Road. Primary solar plant site access would be provided via Mesa Drive. From the Airport exit off I-10, construction workers, other personnel, and visitors would proceed west on Black Rock Road to the existing BSPP unimproved access road. The Applicant may improve this access road, extend it from its current terminus to the MSEP solar plant site, maintain it for the life of the Project and ultimately decommission it. As improved, the access road would be 30 feet wide, consisting of a 24-foot-wide, two-lane paved area with an unpaved 3-foot-wide shoulder on each side. The asphalt concrete surface would overlie Class 2 aggregate base and compacted subgrade, and would be designed to meet the Riverside County Fire Department (RCFD) requirements. Solar plant site access would be controlled as described below under Fencing and Site Security.

Internal Access Roads. Within the solar plant site, a 24-foot-wide paved road would lead from the front gate to the temporary lay-down area, O&M building, Unit 1 substation, and water treatment area. If Unit 2 is constructed, another 24-foot-wide paved road would occupy a 50 to 150-foot-wide corridor between the Unit 1 and Unit 2 substation areas.

An approximately 24-foot-wide gravel perimeter road would be constructed within the perimeter fence line. This road would provide access primarily for security inspections and fence maintenance.

In addition, 24-foot and 16-foot-wide internal roads would provide access to and among the solar panel arrays. This road surface would be scarified, moisture-conditioned, covered with aggregate base and compacted. Parking would be available at points along these internal roads and at the PCS locations as shown in Figure 2-6.

Approximately 50 spur roads, connecting the access road to the transmission line, each 15 feet wide and approximately 50 to 250 feet long, would be constructed.

Fencing and Site Security

For public safety and site security, the Applicant would fence the site and control access via gates located at the entrances to the facility. The main site gate would be either a motor-operated swing or rolling-type security access gate, and would be monitored through a security camera, swipe card, or other mechanism that would control and monitor access. Access through the main gate would be controlled during construction and operation of the MSEP to prevent unauthorized access to the solar plant site. All facility personnel, contractors, and visitors would be logged in and out of the facility through the main gate. A secondary access gate, similar in construction to the main gate, would be used for emergency purposes only. A Fire Department Knox Box or other access device and emergency contact placard would be provided at the main gate and secondary access gate to provide emergency access.

Fencing would be installed around the solar plant site perimeter, substations, and around the evaporation pond described in Section 2.3.1.4.10 as part of the biological clearance survey process. During the construction and initial synchronization of Unit 1 to the CRS, the perimeter fence for the solar plant site would be placed around the Unit 1 solar field area. If Unit 2 is constructed, before the biological clearance surveys for Unit 2 are initiated, the security fence would be constructed around the entire site and the fence along the western boundary portion of the Unit 1 solar field would be removed. Sections of the fencing that cross deep washes and are subject to large storm flows would swing up to allow passage of debris and storm flows. The remainder of the fencing across the deep channels would be a frangible type of fence designed to break away when subject to extreme storm flows. This fencing would be designed for easy repair or replacement after the storm event. Security fencing would be chain-link, approximately 8 feet tall, with 3-strand barbed wire. The security fencing would be constructed offset from the plant boundary with sufficient room outside of the fencing to allow room for fence maintenance on the outside of the fence if necessary. Fencing would be designed to resist all wind or other loads imposed on the fence. Tortoise fencing would be installed 1 foot below the ground surface and 2 feet above ground surface, using a fencing type recommended by USFWS.

Along the western boundary of Unit 2, the site plan shows approximately 96 acres in and around natural drainages located within the fence. This area would remain undisturbed

Drainage Improvements

The topography of the solar plant site is relatively flat: the natural slope within the solar plant site is approximately 1 percent or less. The majority of the site has an elevation between approximately 480 and 800 feet above mean sea level (amsl). Based on existing hydrology, stormwater drainage for the solar plant site would be designed to maintain predevelopment hydraulic conditions in the natural watercourses and to minimize the generation of non-point source pollutants. The concept employed for the design and layout of the solar arrays is to minimize the placement of the arrays in large, established channels (to the extent practical) and to utilize equipment and protective measures that would allow existing drainage patterns to be maintained where possible.

On-site runoff at the proposed solar field follows natural grade to the southeast. Minimal grading is proposed within the solar field to maintain anticipated on-site runoff and infiltration close to the existing conditions. Although not anticipated, if larger areas require grading, a disc and roll technique, which uses farm tractors to till the soil over and then roll it level, would be used. Electrical components within the solar arrays, such as inverters, would be placed outside of main drainage channels and weather- or water-proofed to the extent required.

Lighting

During construction, lighting would be strategically located for safety and security in the construction trailer staging area, parking area, and around site security facilities. Lighting would be located on temporary service poles approximately 18 feet high. Power for the lights would be provided by the proposed distribution line or construction office trailer generator. Lighting is not planned for construction activities; however, if required, it would be limited to the locations and amounts needed to ensure safety. It would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During operation and maintenance, lighting would be provided at the O&M building, Unit 1 and Unit 2 substations, site entrance, and switchyard. Exterior security lighting would be installed to provide for safe access to Project facilities as well as visual surveillance. Some portable lighting also could be required for maintenance activities that must be performed at night. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required, and all lights would be hooded and directed to minimize backscatter and off-site light.

During site closure and decommissioning, safety and security lighting would be provided using a combination of the installed lighting system and portable lighting if required. As with the other Project phases, lighting would be focused downward, shielded, and directed so as to minimize light exposure to areas outside the work area.

2.3.1.3.8 Distribution Power Line

During construction, electricity service to the solar plant site and the construction trailers would be required for lighting, air conditioning or space heating, water heating, and to power small appliances, temporary site lighting, and machinery operation. Power during the construction period, estimated at a peak demand of 10,000 kilowatt hours (kWh) per year, would be supplied by extending a distribution line from the east as shown in Figure 2-2. The new distribution line would be constructed, operated, maintained, and decommissioned by SCE. It would be approximately 20,000 feet long, 2000 kilovolt-amperes, and strung on wooden poles approximately 50 feet high and approximately 150 feet apart, ending at a 12 kV metering pole at the site boundary. A total of 130 to 140 poles would be required for the distribution line.

During operation and maintenance of the Project, this distribution power circuit also could provide a backup power supply for the low voltage tracker motors, various monitoring instruments, computer, access gates, and other low voltage equipment. It would be decommissioned as described in Section 2.6.2.

2.3.1.3.9 Water Supply and Usage

Water Supply and Use

No water service is available at the proposed site. Groundwater in the area is contained within the Palo Verde Mesa Groundwater Basin (PVMGB) of the Colorado River Hydrologic Region.

The Applicant does not propose to extend municipal water or sewer service to the Project site. Water in sufficient quantity and quality to serve Project needs is expected to be available from two or three primary wells and a sufficient number of back-up wells, which would be used in the event the primary wells are shut down for maintenance. All wells would be constructed and operated within the solar plant site at the eastern end of Unit 1; the precise location of the well field would be defined during the detailed design. If possible, one of the wells would be located near the proposed water treatment system area. As currently planned, the wells would pump groundwater from the PVMGB, where the water table has been measured at or near 254 feet amsl.

If required, well permits would be obtained from the Riverside County Department of Public Health, Environmental Health Services, Safe Drinking Water Permit Section. Wells would be constructed using the minimum standards for construction, reconstruction, abandonments and destruction of all wells per Riverside County Ordinance No. 682: Construction, Reconstruction, Abandonment and Destruction of Wells. Wells would be spaced to minimize water level drawdown and groundwater level monitoring would ensure compliance and provide data for long term groundwater trends identification. Permits would be issued after compliance with the applicable standards. Plans would be submitted to the Department demonstrating compliance with such standards.

Water from the proposed wells would be tested for and meet the domestic water quality and monitoring standards for constituents as required by the California Code of Regulations (22 Cal. Code Regs. §64400.80 et seq.). Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the California Department of Health Services (DHS). The wells also must be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated by the DHS. DHS would designate the year based on historical monitoring frequency and laboratory capacity. The Applicant would sample and conduct groundwater quality monitoring consistent with any Waste Discharge Requirements issued for the MSEP by the Colorado River Regional Water Quality Control Board (RWQCB).

If any on-site wells are determined not to be needed for groundwater production or monitoring purposes, or upon Project closure, the well would be decommissioned and filled under permit from and in accordance with County of Riverside Health Department requirements. The well concrete pads and stickups would be removed to a depth of approximately 5 feet below grade and the ground surface would be restored to its previous contours.

Construction-related Water Needs

Construction-related water use would support site preparation and grading activities. During earthwork for the grading of access roads, foundations, equipment pads, and other components, the primary uses of water would be for compaction and dust control. Smaller quantities would be required for preparation of the concrete required for building foundations and other minor uses. Subsequent to the earthwork activities, the primary water use would be for dust suppression. Based on similar projects, the Applicant estimates that the average water usage rate during construction would be approximately 180 to 200 gallons per minute. The total water usage during construction of Unit 1 is estimated to be approximately 450 acre-feet (AF), based on similar projects. The water demand associated with the construction of Unit 2 would be reduced relative to Unit 1, because elements common to the units would have been installed as part of Unit 1. The total water usage during construction of Unit 2 is estimated to be approximately 200 to 300 AF.

Drinking (potable) water would be supplied for construction workers on-site, and is estimated to be approximately 10,000 gallons per month (approximately 0.5 acre-foot per year (AFY)), varying seasonally and by work activities. The potable water could be brought to the solar plant site by tanker truck, or groundwater could be used with a package water treatment system to treat the water to meet potable standards.

Operation and Maintenance-related Water Needs

Water quality is expected to be unsuitable for potable use without treatment, with between 730 and 3,100 milligrams per liter of total dissolved solids (AECOM, 2011). Consequently, the Applicant is considering either options for treatment of groundwater or the importation of trucked potable water to meet the Project's potable water requirements for operation and maintenance. If the groundwater option is selected, water would be treated with a conventional package water treatment system to assure that any drinking water meets potable standards. Either a reverse osmosis/electrodeionization (EDI) system or a deep bed demineralizer system would be used for other (non-drinking water) purposes. The water treatment system design has not been developed, but could include either a trailer-mounted water treatment system or a free-standing facility. The water treatment system would supply water for the MSEP for the purposes and in the amounts indicated in Table 2-3.

TABLE 2-3
OPERATION AND MAINTENANCE-RELATED WATER USE

Water Use		PV Module Cleaning, Dust Control (1)		Potable water (2)	
	Solar Field Unit	Unit 1	Unit 2	Unit 1	Unit 2
Annualized Average	Rate (gpd)	13,400 – 19,600	13,400	275	0
Estimated Peak	Rate (gpd)	67,000 – 99,000	67,000 – 99,000	460 – 900	0
Estimated Annual	Use (AF)	15 - 22	15 - 22	1	0

SOURCE: McCoy Solar LLC, 2011a

A trailer-mounted water treatment system is a totally enclosed, self-contained, containerized water treatment system. This system would include filters and demineralizer vessels. These systems typically are leased with a service contract, contain all the necessary supplies for operation, and are taken off-site for the regular regeneration and periodic maintenance that is required. No wastewater discharge is expected.

The water treatment area would be constructed on BLM-administered land on the eastern side of the solar plant site, just northwest of the privately owned parcels. It would be a roughly square area up to a maximum of 3 acres. The water treatment area would contain the water treatment system and water storage area. A free-standing water treatment facility would contain different equipment from the trailer-mounted system, and be based predominately on reverse osmosis treatment. It would be constructed on site in an enclosure for permanent use. The enclosure would be a pre-fabricated steel building on a concrete foundation with a maximum height of 17 feet. Water treatment equipment would include pumps, filters, biocide or ozone injection, and a reverse osmosis/EDI system. The water treatment facility would house the filter replacements and tools needed for periodic maintenance of the system. Wastewater discharge would be non-hazardous, have a maximum quantity of up to 42 gallons per minute (gpm), and be produced primarily from the reverse osmosis reject. One or more on-site netted evaporation ponds (up to 8 acres total) would be required for disposal of the wastewater and would be constructed, operated and maintained, and ultimately removed from the water treatment area within the solar plant site boundary. The location of the proposed water treatment area is shown on Figure 2-3.

There would be three tanks on site for the storage of the raw fire water, potable water, and demineralized water for the MSEP. The raw water tank storage capacity also would provide the fire supply. This tank would measure approximately 9.25 feet in diameter and 20 feet high, and would hold up to 15,000 gallons. It would be constructed of bolted or welded steel and painted with a non-reflective coating to blend with the surrounding environment. The potable water tank would be of similar construction with a maximum volume of 5,000 gallons, diameter of 9 feet, and height of 10 feet. The 60,000-gallon demineralized water tank would store water to be used for panel washing. It would be stainless steel and painted with a non-reflective coating, approximately 26 feet in diameter and 16 feet high.

The panels would be cleaned on an as-needed basis, depending on the frequency of rainfall, proximity of arrays to airborne particulates and other factors. The analysis in this document assumes that panel washing would occur in the fall and spring and take approximately 35 days to complete per Unit per wash. Panel washing for both Units could take a total of 140 to 145 days per year to complete. Approximately 67,000 to 99,000 gallons per day (gpd) per unit, which equates to approximately 9.8 to 14.4 million gallons per year or between 30 and 44 AFY for the entire Project, would be required to wash the panels.

Based on the anticipated uses (including drinking water, showers, restroom facilities, panel washing, dust suppression, and 3,000-gallon dedicated fire supply, among other uses), the estimated quantity of water needed for operation and maintenance of the MSEP would be approximately 15 to 22 AFY per Unit, plus a total of 1 AFY of potable water. The primary use of water during operation and maintenance-related activities would be for panel washing and dust control (the proposed PV technology requires no water for the generation of electricity).

A BLM-approved dust suppressant would be applied to control dust. Water could be used to supplement the dust suppressant in some areas on a limited basis; the amount of water used depends on the type of suppressant used and the manufacturer’s recommendations. The concentrate from a reverse osmosis treatment unit (if required for on-site water treatment) might be used for dust control by blending it with water from the on-site water wells.

An additional approximately 14,000 to 27,000 gallons per month (up to about 0.5 to 1.0 AFY) of potable water would be required to serve the demand of approximately 20 on-site personnel, varying seasonally and by work activities. Potable water could be brought to the solar plant site by tanker truck, or could be provided by treated on-site groundwater. The solar plant site's internal access roads would not be heavily traveled during normal operations.

Decommissioning and Site Reclamation-related Water and Wastewater Needs

Because conditions can change during the course of a 30- to 40-year project life, a final Decommissioning and Closure Plan would be submitted for BLM and County review and approval based on conditions as found at the time of facility closure. Best management practices would be followed during construction to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances. Per the requirements of the Mojave Desert Air Quality Management District (MDAQMD), standard dust control mitigation measures would be implemented to reduce dust particulate emissions during demolition and grading activities. It is anticipated that the decommissioning and site reclamation would be staged in phases, allowing for a minimal amount of disturbance and requiring minimal dust control and water usage. Water usage during decommissioning and site reclamation would not exceed operational water usage.

2.3.1.3.10 Waste and Hazardous Materials Management

Wastewater

Two separate wastewater collection systems would be provided as part of the Project: one for sanitary wastes, and another to address the process wastewater.

The sanitary wastewater system would collect sanitary wastewater at the O&M building. Portable chemical toilets would be provided for workers in the solar fields. The sanitary wastewater from sinks, toilets, showers, other sanitary facilities in the O&M building would be discharged to a sanitary septic system and on-site leach field. The septic system would be designed and permitted in accordance with state and County regulations.

On-site water treatment would discharge minimal wastewater (up to 42 gpm). Depending on the water quality and the need for on-site regeneration of the water treatment system, up to a total of 8 acres of netted evaporation ponds could be required. If required, the evaporation ponds would be located near the water treatment system within the water treatment area. The analysis in this document assumes that the evaporation ponds would be constructed, operated, maintained, and decommissioned as part of the MSEP.

The average pond depth design could be up to 8 feet and residual precipitated solids would be removed approximately every 8 to 10 years, as needed, to maintain a solids depth no greater than 3 feet for operational and safety purposes. The precipitated solids would be sampled and analyzed to meet the characterization requirements of the receiving disposal facility. The characteristics of the precipitated solids would determine the transportation and disposal methodology. It is anticipated the pond solids and other non-hazardous wastes would be classified as Class II non-hazardous industrial waste. Pond solids would be tested using appropriate test methods in advance of removal from the evaporation ponds to confirm this determination; however, preliminary estimates show the material would be non-hazardous.

If evaporation ponds are needed, a Water Discharge Requirement (WDR) permit would be obtained from the Colorado River RWQCB, which is expected to require the preparation of a Water Quality Monitoring and Response Plan that includes monitoring of the Project pond liner to detect leaks, as well as groundwater monitoring. Groundwater monitoring would be done using existing wells where possible and could include additional monitoring wells as needed to provide adequate monitoring of groundwater quality.

A Final Closure and Post-Closure Maintenance Plan would be submitted to the RWQCB as an amendment to the original evaporation pond permit before undergoing complete final closure of any portion of the evaporation ponds. In the Final Closure and Post-Closure Maintenance Plan, the regulatory requirements applicable at that time would be addressed. After the evaporation pond has been closed, a Certification of Closure would be submitted for approval to the RWQCB to verify these impoundments have been closed in accordance with the approved Final Closure and Post-Closure Maintenance Plan.

The preliminary closure activities for the evaporation ponds may include the following processes:

1. Removal of wastewater;
2. Removal of solids / sludge;
3. Removal of hard surface / protective layer and granular fill;
4. Removal of high density polyethylene (HDPE) liners, drainage layers and leak detection system; and then
5. Site restoration, including soil rehabilitation as necessary.

Confirmation sampling would be conducted on the clay layer of the evaporation pond liner system after the removal of the 40 mil HDPE geomembrane secondary liner. If a geosynthetic clay liner (GCL) is used in the final design, then the native materials below the GCL would be sampled after the removal of the overlying liner systems. Samples would be collected from each of the former pond footprints on 100-foot by 100-foot grid spacing. Laboratory analysis would include California Code of Regulations Title 22 metals, biphenyl, diphenyl oxide, and chloride.

The evaporation ponds would be backfilled with native soil to match the existing surrounding grade and restore drainage function. The berm surrounding each evaporation pond would be the primary backfill material. These materials would be placed at depths exceeding 3 feet below final grade. The upper 6 inches of soil would be decompacted as necessary to prepare the soil for revegetation.

The environmental analysis in this document assumes that the evaporation ponds would be constructed, operated, maintained, and decommissioned as part of the Project.

Solid (Non-Hazardous) Waste

Construction, operation, maintenance, and decommissioning of the MSEP would generate non-hazardous solid wastes typical of power generation or other industrial facilities. Solar plant-related wastes generated during all phases of the Project would include: oily rags, worn or broken metal and machine parts, defective or broken electrical materials, other scrap metal and plastic, insulation material, empty containers, paper, glass, and other miscellaneous solid wastes including the typical refuse generated by workers. These materials would be disposed by means of contracted refuse collection and recycling services. Waste collection and disposal would be in accordance with applicable regulatory requirements to minimize health and safety effects.

Information on universal wastes anticipated to be generated during Project construction is provided in Table 2-4. Universal wastes and unusable materials would be handled, stored, and managed per California Universal Waste requirements.

TABLE 2-4
SUMMARY OF CONSTRUCTION WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream and Classification[a]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	On-site Treatment	Waste Management Method/Off-site Treatment
Construction waste – Hazardous	Empty hazardous material containers	1 cubic yard per week (cy/wk)	Intermittent	None. Accumulate on site for <90 days	Return to vendor or dispose at permitted hazardous waste disposal facility
Construction waste – Hazardous	Solvents, used oil, paint, oily rags	175 gallons	Every 90 days	None. Accumulate on site for <90 days	Recycle or use for energy recovery
Spent batteries - Universal Waste	Lead acid, alkaline type	20 in 2 years	Intermittent	None. Accumulate on site for <90 days	Recycle
Construction waste – Non-hazardous	Scrap wood, concrete, steel, glass, plastic, paper	40 cy/wk	Intermittent	None	Recycle wherever possible, otherwise dispose to Class III landfill
Sanitary waste – Non-hazardous	Portable Chemical Toilets - Sanitary Waste	200 gallons/ day	Periodically pumped to tanker truck by licensed contractors	None	Ship to sanitary wastewater treatment plant
Office waste – Non-hazardous	Paper, aluminum, food	1 cy/wk	Intermittent	None	Recycle or dispose to Class III landfill

NOTE:
[a] Classification under 22 California Code of Regulations (CCR) §66261.20 et seq.

SOURCE: McCoy Solar LLC, 2011a

Operation and maintenance of the Project would generate sanitary wastewater, non-hazardous wastes, and small quantities of hazardous wastes. Operation and maintenance of the Project's linear facilities (e.g., the gen-tie line) would generate minimal quantities of waste. The types of waste and their estimated volumes are summarized in Table 2-5.

Facility construction, operation, maintenance, and decommissioning would generate wastes that require proper management and in some cases off-site disposal. There are seven permitted Class III landfills located in the County within approximately 145 miles of the Project site. There are two major permitted Class I hazardous waste landfills located in California, located approximately 350 and 400 road miles from the site, respectively.

TABLE 2-5
SUMMARY OF OPERATION WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream and Classification[a]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	Waste Management Method	
				On site	Off site
Used Hydraulic Fluid, Oils and Grease – Non-RCRA[b] Hazardous	Tracker drives, hydraulic equipment	1000 gallons/year	Intermittent	Accumulated for <90 days	Recycle
Oily rags, oil absorbent, and oil filters – Non-RCRA Hazardous	Various	One 55-gallon drum per month	Intermittent	Accumulated for <90 days	Sent off site for recovery or disposed at Class I landfill
Spent batteries – Universal Waste	Rechargeable and household	<10/month	Continuous	Accumulate for <1 year	Recycle
Spent batteries – Hazardous	Lead acid	20 every 2 years	Intermittent	Accumulated for <90 days	Recycle
Spent fluorescent bulbs – Universal Waste	Facility lighting	< 50 per year	Intermittent	Accumulate for <1 year	Recycle
Sanitary wastewater – Nonhazardous	Toilets, washrooms	250 gallons/day	Continuous	Septic leach field	None

NOTES:
[a] Classification under 22 CCR §66261.20 et seq.
[b] Resource Conservation and Recovery Act

SOURCE: McCoy Solar LLC, 2011a

Hazardous Materials Management

During construction, all hazardous materials would be stored on-site in storage tanks, vessels, or other appropriate containers specifically designed for the characteristics of the materials to be stored. The storage facilities would include secondary containment in case of tank or vessel failure. Construction- and decommissioning-related hazardous materials used for development of the Project would include: gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. Material Safety Data Sheets for all applicable materials present on-site would be readily available to on-site personnel.

Fueling of some construction vehicles would occur in the construction area. Other mobile equipment would return to the laydown area for refueling. Special procedures would be identified to minimize the potential for fuel spills, and spill control kits will be carried on all refueling vehicles for activities such as refueling, vehicle or equipment maintenance procedures, waste removal and tank clean-out. Fuel for construction equipment could be provided by a fuel truck or could be stored on-site in aboveground double-walled storage tanks with built-in containment.

A Spill Prevention and Management Plan (SPMP) would include procedures, methods, and equipment supplied during construction to prevent discharges from reaching waters of the state. The plan would be certified by a Registered Professional Engineer and a complete copy of it would be maintained on-site.

During MSEP operation, a variety of chemicals and hazardous materials would be stored and used at the facility. Chemicals would be stored inside the O&M building as appropriate to prevent exposure to the elements and to reduce the potential for accidental releases, and in appropriate chemical storage containers. Bulk chemicals would be stored in storage tanks; other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Containment berm and drain piping design would accommodate a full-tank capacity spill without overflowing the containment berms. For multiple tanks located within the same bermed area, the capacity of the largest single tank would determine the volume of the bermed area and drain piping. The transport, storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards.

The quantities of hazardous materials stored on-site would be evaluated to identify the required usage and to maintain sufficient inventories to meet use rates without stockpiling excess chemicals. Chemicals that could be present during construction, operation and maintenance of the Project are included in Table 2-6.

If a portable, trailer-mounted water treatment system would meet the MSEP flow and water quality demands described above, then no additional chemicals would be required for maintenance and regeneration of the system. However, if a site-specific water treatment system is used, then the regeneration process could require additional chemicals to maintain its performance. Such chemicals could include sodium hydroxide solution, sodium hypochlorite solution, and/or sulfuric acid solution.

The Applicant would develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials (e.g., Hazardous Material Business Plan). Solar plant personnel would be supplied with appropriate personal protective equipment (PPE) and would be properly trained in the use of PPE as well as the handling, use, and cleanup of hazardous materials used at the facility and the procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate cleanup materials would be stored on-site.

In addition to the chemicals listed above, small quantities (less than 55 gallons, 500 pounds or 200 cubic feet) of janitorial supplies, office supplies, laboratory supplies, paint, degreasers, herbicides, pesticides, air conditioning fluids (chlorofluorocarbons or CFCs), gasoline, hydraulic fluid, propane, and welding rods typical of those purchased from retail outlets also could be stored and used at the facility. These materials would be stored in the maintenance warehouse or office building. Flammable materials (e.g., paints or solvents) would be stored in flammable material storage cabinet(s) with built-in containment sumps. The remainder of the materials would be stored on shelves, as appropriate.

Hazardous Waste

Small quantities of hazardous wastes would be generated during MSEP construction, operation, maintenance, and decommissioning. Hazardous wastes generated during the construction phase would include substances such as paint and primer, thinners, and solvents. Hazardous solid and liquid waste streams that would be generated during operation of the Project include substances such as used hydraulic fluids, used oils, greases, filters, etc., as well as spent cleaning solutions and

TABLE 2-6
SUMMARY OF SPECIAL HANDLING PRECAUTIONS FOR LARGE QUANTITY HAZARDOUS MATERIALS

Hazardous Material	Use	Relative Toxicity[a] and Hazard Class[b]	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Carbon Dioxide		Low toxicity; Hazard class – Nonflammable gas	TLV: 5,000 ppm (9,000 mg/m^3) TWA	Carbon steel tank, 15 tons maximum on-site inventory	Carbon steel tank with crash posts.
Diesel Fuel	Equipment refueling and emergency diesel fire pump	Low toxicity; Hazard class – Combustible liquid	PEL: none established TLV: 100 mg/m^3	Carbon steel tank (3,600 gallons)	Secondary containment, overfill protection, vapor recovery, spill kit.
Hydraulic fluid (if applicable)	Tracker drive units	Low to moderate toxicity; Hazard class – Class IIIB combustible liquid	TWA (oil mist): 5 mg/m^3 STEL: 10 mg/m^3	Hydraulic drive tank, approximately 20 gallons per tracker drive unit (if applicable) throughout solar field. Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Found only in equipment with a small maintenance inventory. Maintenance inventory stored within secondary containment; alternative measures to secondary containment for equipment will be implemented at the project.
Lube Oil	Lubricate rotating equipment (*e.g.,* tracker drive units)	Low toxicity Hazard class – NA	None established	Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Secondary containment for tank and for maintenance inventory.
Mineral Insulating Oil	Transformers/ switchyard	Low toxicity Hazard class – NA	None established	Carbon steel transformers; total on-site inventory of approximately 250,000 gallons (each 1 megavolt-ampere transformer contains approximately 500 gallons). Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Used only in transformers, secondary containment for each transformer. Maintenance inventory stored within secondary containment; alternative measures to secondary containment for equipment will be implemented at the project.
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent		Non-toxic; Hazard class - NA	None established	No on-site storage, supplied in 55-gallon drums or 400-gallon totes, used immediately	No excess inventory stored on-site.
Sulfur Hexafluoride	230 kV breaker insulating medium			Contained within switchyard equipment; maximum of 7500 lbs	Inventory management.
Acetylene	Welding gas	Moderate toxicity; Hazard class – Toxic	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management, isolated from incompatible chemicals.
Argon	Welding gas	Low toxicity; Hazard class – Nonflammable gas	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management.
Oxygen	Welding gas	Low toxicity; Hazard class – Oxidizer	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management, isolated from incompatible chemicals.

NOTES:

[a] Low toxicity is used to describe materials with a National Fire Protection Association (NFPA) Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4.
[b] NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.

SOURCE: McCoy Solar LLC, 2011a

spent batteries. Hazardous wastes generated during decommissioning would include substances such as: carbon dioxide, diesel fuel, hydraulic fuel and lube oil. To the extent possible, all hazardous wastes would be recycled.

The Applicant or its contractor would obtain a hazardous waste generator identification number from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) prior to generating any hazardous waste. All spills would be reported to BLM and the County. Spills greater than 25 gallons would be reported to the RWQCB. A sampling and cleanup report would be prepared and sent to the RWQCB to document each spill and clean up. Each spill, regardless of amount, would be cleaned up within 48 hours and a spill report completed. Copies of all spill and cleanup reports would be kept on-site.

2.3.1.3.11 Vegetation Management and Fire Protection Systems

Before beginning construction activities, the Applicant would identify areas that require protection to sensitive resources within and/or adjacent to the site, which would be identified by a variety of methods including flagging, marking paint, signs, rope, or staking. Where not otherwise specified, a suitable method for mitigation and/or removal and relocation of the biologically sensitive resource would be selected by the biologist assigned to the Project.

Vegetation Management

Weed management areas would be identified including the solar plant site (fence line and solar fields), linear facilities, and a buffer area 100 feet out from the boundary of these features. The Applicant would develop a plan for the control of noxious weeds and invasive species that could occur as a result of activities at the solar plant site. The plan would address methods for avoidance of weed introduction and spread by project activities, monitoring, and the management of weeds, including mechanical and chemical methods.

General measures that would be used to limit the spread of weeds and invasive species on the site could include the following:

1. Training for MSEP operation personnel regarding the importance of preventing the introduction or spread of noxious weeds.

2. Limiting disturbance areas during construction to the minimum required to perform work.

3. Limiting ingress and egress to defined routes.

4. Maintaining vehicle wash and inspection stations and closely monitoring the types of materials brought on-site to minimize the potential for weed introduction.

5. Contractor certification of any straw or hay bales used for sediment barrier installations that verifies they are obtained from sources free of primary noxious weeds.

6. Soil management by limiting ground disturbance to the minimum feasible acreage to minimize the spread of seeds. Cleared vegetation and salvaged topsoil will be stockpiled adjacent to the area from which they are stripped to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. During reclamation of the temporarily cleared

areas, the contractor would return topsoil and vegetative material to the areas from which they were stripped.

7. Dust palliatives and water would be used during construction to minimize the spread of airborne weed seeds, especially during very windy days, which are characteristic in the MSEP vicinity. As appropriate, temporary drift fences could be installed to help control sand movement during construction.

8. Because Saharan mustard, Russian thistle, Mediterranean grass, and tamarisk occur both on-site and within the MSEP vicinity, measures would be implemented to control and suppress current weed populations from spreading and increasing in density.

9. The Applicant primarily would use mechanical weed removal techniques with the use of BLM-approved herbicides, as appropriate

10. The Applicant would use BLM-approved pre- and/or post-emergent herbicides (within their respective jurisdictions), if applicable. Pre-emergent herbicides would be applied to the soil before the weed seed germinates and usually is incorporated into the soil with irrigation or rainfall. Post-emergent herbicides would be applied directly to plants. Herbicides would be investigated in detail, made a part of the Weed Management Plan, and approved by the applicable agency before use.

11. Before beginning construction on the MSEP, a more detailed Invasive Weed Management Plan would be prepared and circulated to the BLM for its comment and approval. The approved plan would be implemented.

Pesticide use would be limited to non-persistent, immobile pesticides applied only in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any pesticide applications, if used, would be conducted within the framework of BLM and Department of Interior policies, and would entail only the use of U.S. Environmental Protection Agency (USEPA) registered pesticides.

Fire Protection

Fires are most likely to be introduced from human activity, and also could occur as a result of lightning strikes or equipment malfunctions. Project-related fire-protection activities would be taken to limit personnel injury, property loss, and Project downtime resulting from a fire. During construction, a water truck or other portable trailer-mounted water tank would be kept on-site and available to workers for use in extinguishing small man-made fires. Fire watches would be required during hot work on-site. An Emergency Action Plan (EAP) would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM and local fire departments for approval before the Applicant receives a Notice to Proceed (NTP). During operation and maintenance of the Project, fire protection systems for the solar plant site would include a fire protection water system for protection of the O&M building, including portable fire extinguishers and possibly hydrants. The fire protection water system would be supplied from a 15,000-gallon raw and fire water storage tank located on the solar plant site near the O&M area.

To decrease the risk of fire during operation and maintenance of the Project, all vegetation underneath the panels would be managed via either mechanical mowing/trimming or with a

BLM-approved herbicide in accordance with guidance provided in the Solar PEIS; Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States and the Final Vegetation Treatments Programmatic Environmental Report (PER) (BLM, 2007).[5] A pre-emergent herbicide would be applied in the spring, and spot foliar applications may be used throughout the year to manage invasive vegetation.

Fire support services to the MSEP site would be under the jurisdiction of the RCFD. Fire Station No. 43 in Blythe, which is equipped with a medic engine, a squad, a County engine, and a water tender, and Fire Station No. 45 located at the Blythe airbase, 7 miles from the solar plant site, which is equipped with a medic engine, are the closest stations to the MSEP. The closest hazmat responder would be Fire Station No. 81 in Palm Desert.

2.3.1.3.12 Health and Safety

The Applicant would document worker safety practices and training in a Safety and Health Program to ensure worker safety and minimize worker hazards during construction and operation. The program would include a PPE Program, an EAP that designates responsibilities and actions to be taken in the event of an emergency, and an Injury and Illness Prevention Program (IIPP) to address health and safety issues associated with normal and unusual (emergency) conditions associated with the high voltage systems, mechanical systems, and other solar plant operations.

Construction-related safety programs and procedures would include a hearing conservation program, respiratory protection program, fall protection procedures, hot work procedures, cranes and rigging/lifting requirements, heavy equipment procedures, and others. An operational emergency response plan would be developed for use by solar plant operators. Safety showers and eyewashes would be provided adjacent to or in the area of all chemical storage and use areas. Appropriate PPE would be supplied to solar plant personnel for use during any chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and wastes and instructed in the procedures to follow in case of a chemical spill or accidental release.

2.3.1.4 Applicant Proposed Measures and Management Practices

The Applicant has proposed certain measures (Applicant Proposed Measures, or APMs) to reduce or avoid potential environmental impacts that could result from the Project or any of the action alternatives (Table 2-7). These APMs would be implemented like other elements of the Project, and are not “mitigation measures” as the term is used in the NEPA context. The impact analysis in the PA/FEIS therefore evaluates the impacts of the Proposed Action and alternatives with the APMs applied.

5 The Record of Decision associated with the PER (72 FR 57065-01), published October 5, 2007, outlines the herbicides that are approved for use on public lands, including 14 herbicides with the following USEPA registered active ingredients: 2, 4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr identifies the states where the active ingredients are approved. It also identified six herbicide active ingredients that are not permitted for use BLM lands unless a need is shown by the BLM and updated risk assessments for human health and ecological risks are assessed. The six precluded active ingredients are: 2, 4-DP, asulam, atrazine, fosamine, mefluidide, and simazine.

TABLE 2-7
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Air Resources	
AIR-1	**To reduce construction-generated air quality impacts:** a. The main access roads through the facility to the unit substation areas shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main unit substation area. b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as California Air Resources Board (ARB)-approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the solar plant site and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. The frequency of watering can be reduced or eliminated during periods of precipitation. c. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. d. Visible speed limit signs shall be posted at the site entrance(s). e. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways. f. Gravel ramps of at least 20 feet in length shall be provided at the tire washing/cleaning station. g. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways. h. All construction vehicles shall enter the construction site through the treated entrance roadways. i. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris. j. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways. k. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds. l. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard. m. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this measure shall remain in place until the soil is stabilized or permanently covered with vegetation. n. The disruption of desert pavement shall be minimized to the extent feasible.
AIR-2	**To reduce operation- and maintenance related air emissions:** a. The main access roads through the facility to the unit substation areas shall either be paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, and delivery areas for operations materials (chemicals, replacement parts, etc.) shall be paved or treated prior to taking initial deliveries. b. All unpaved operation and maintenance site roads shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB-approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. After construction activities, all disturbed areas in the solar plant site and linear sites shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods.

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Air Resources (cont.)	
AIR-2 (cont.)	c. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. d. Visible speed limit signs shall be posted at the site entrance(s). e. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard. f. The disruption of desert pavement shall be minimized to the extent feasible.
Biological Resources	
BIO-1	**Desert tortoise-specific protection measures during construction:** a. ***Environmental Compliance Personnel*:** Environmental compliance personnel shall be employed to oversee the implementation of all desert tortoise protection measures in accordance with a Biological Opinion (BO). An Environmental Compliance Manager (ECM) will be assigned to the Project who shall be an on-site staff member of the Project. The ECM will be responsible for facilitating implementation of the environmental conditions of the Project and for coordinating compliance with the BLM and USFWS. A Project Lead Biologist and alternate Lead Biologists with demonstrated expertise with desert tortoise shall oversee compliance with the protection measures for the desert tortoise and other special-status species. There also shall be Authorized Biologists (ABs) that have demonstrated expertise to conduct specific activities for desert tortoise protection; the Lead Biologist also will be an AB. Additionally, qualified Biological Monitors (BM) will assist the AB in enforcing PMs. McCoy Solar shall submit the names and qualifications of the proposed Lead Biologist(s) and all ABs to the USFWS and BLM for review and approval prior to pre-construction clearance surveys. Project activities involving ground disturbance shall not begin until the Lead Biologist and ABs are approved by the aforementioned agencies. Replacement of Lead Biologist and ABs would require USFWS and BLM approval. The ECM, ABs, and BMs shall have the authority to halt all non-emergency activities that are in violation of the protection measures, or if a desert tortoise wanders into a work site. Work will proceed only after hazards to the desert tortoise are removed, the species no longer is at risk, or the animal has been moved from harm's way by the AB. The ABs will document any incident occurring during Project activities which is in non-compliance with the protection measures stated in the BO. The Lead Biologist and ECM shall ensure that appropriate corrective action is taken. Corrective actions shall be documented by the AB or BM. The following incidents shall require immediate cessation of the Project activities causing the incident: 1. Imminent threat of injury or death to a desert tortoise. 2. Unauthorized handling of a desert tortoise. 3. Operation of construction equipment or vehicles outside of areas secured with desert tortoise fencing without a BM present, except on designated roads. 4. Conducting any construction activity without an AB or BM present where one is required. b. ***Desert Tortoise Exclusion Fencing*:** Prior to the onset of ground disturbing activities, the entire solar plant site will be fenced with permanent tortoise exclusion fence per current USFWS requirements (USFWS, 2009) to keep tortoises from entering the solar plant site during construction and operations phases. The fencing type will be 1-inch by 2-inch vertical mesh galvanized fence material, extending at least 2 feet above the ground and buried at least 1 foot. Where burial is impossible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent tortoises from digging under the fence. Tortoise-proof gates will be established at all site entry points. Fence construction may be completed during any time of the year (USFWS, 2010). As necessary, linear facilities (e.g., gen-tie line and switchyard) will be temporarily fenced to prevent tortoise entry during construction. Alternatively, monitoring during construction can be used to protect tortoises instead of temporary fencing. Temporary fencing will follow current USFWS guidelines for permanent fencing and supporting stakes will be sufficiently spaced to maintain fence integrity; burial may be minimized to avoid surface disturbance. All fence construction will be monitored by an AB or BMs to ensure that no desert tortoises are harmed. Following installation, all permanent exclusion fencing will be inspected monthly and during all major rainfall events; temporary fencing will be inspected at least weekly, or more often as necessary. Any damage to the fencing will be repaired immediately. All fencing erected during a tortoise activity period or prior to tortoises exiting

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Biological Resources (cont.)	
BIO-1 (cont.)	brumation will be inspected at least three times each day for a minimum of 2 weeks (or for a minimum of two weeks after tortoises become active following brumation), to search for any tortoises that might be fence-walking; at least one search will occur immediately prior to lethal ambient temperatures. c. ***Pre-Construction Clearance Surveys*****:** Within 1 week prior to fence installation, the AB and/or approved BMs will survey the staked fence line location for all desert tortoise burrows and tortoises, covering a swath of at least 90 feet centered on the fence line, using 15-foot-wide transects. All potential desert tortoise burrows or pallets will be searched. Burrows along the fence line that must be disturbed will be excavated by ABs or approved BMs using hand tools. Tortoise burrows will be mapped using Global Positioning System (GPS), and the size and age identified. Where flagging would not attract poaching, burrows will also be flagged. All fence construction then will be monitored by BMs. A clearance survey for tortoises will be conducted inside all fenced areas. Consistent with the McCoy Desert Tortoise Translocation Plan (BIO-1[d]), a minimum of two consecutive clearance passes without finding any new tortoises must be completed and these must coincide with heightened tortoise activity from mid-March through May and September through early November, or as otherwise agreed to by BLM and USFWS. This will maximize the probability of finding all tortoises. Clearance transects will be a maximum of 15 feet (5-meters) apart per USFWS approved protocols (USFWS, 2009), except on broad patches of unvegetated, well-developed desert pavement, where the width may be increased to a maximum of 30 feet (9 meters). Once the solar plant site is deemed free of tortoises, then heavy equipment will be allowed to enter the site to perform construction activities. It is anticipated that very few tortoises will be found during clearance or monitoring activities, but if tortoises are observed, the biologists will implement the McCoy Desert Tortoise Translocation Plan. The AB and BMs also will conduct clearance surveys of construction areas outside of the solar plant site. Burrows will be avoided if at all possible (especially if this is temporary fencing). But, if a burrow must be destroyed for fencing to occur, then it will be visually and tactilely examined for occupancy by tortoises and other wildlife. If occupancy is negative or cannot be established, the burrow will be carefully excavated with hand tools, using standardized techniques approved by USFWS (2009) and the Desert Tortoise Council (1994), including disinfection techniques for all tools. No burrows that can be avoided will be collapsed during perimeter fence construction. Other tortoise burrows will be flagged judiciously to avoid attraction of tortoise predators or people to the burrow. All BMs, the AB, and relevant construction personnel will be informed of all potential tortoise activity adjacent to an unfenced construction area. Following Project area clearance, a report will be prepared by the Project Lead Biologist to document the clearance surveys, the capture and release locations of all desert tortoises found, post-release monitoring, individual tortoise data, and other relevant data, consistent with the McCoy Desert Tortoise Translocation Plan. This report will be submitted to the BLM and USFWS. d. ***Desert Tortoise Translocation Plan*****:** The Applicant will prepare and implement a Desert Tortoise Translocation Plan that will be approved by USFWS prior to construction. e. ***Construction Monitoring*****:** No construction will occur in unfenced areas (see BIO-1[b], *Desert Tortoise Exclusion Fencing*) on the linear facilities without BMs present. This includes both the construction phase (construction, revegetation) and maintenance activities during the operations phase that require new surface disturbance. An adequate number of trained and experienced monitors must be present during all construction activities in unfenced areas, depending on the various construction tasks, locations, and season. f. ***Dead, Injured, and Sick Desert Tortoises*****:** The Lead Biologist will notify the BLM and USFWS immediately if a dead or injured desert tortoise is observed. Written notification must be made within 2 days of the date of the finding or incident (if known) and must include: Location of the tortoise, photographs, cause of death (if known), and other pertinent information. The AB will ensure that all tortoises injured by Project activities receive prompt veterinary care at the Applicant's expense. If an injured animal recovers, the BLM and USFWS will be contacted by the Applicant for final disposition of the animal. However, if efforts to keep the injured animal separate from other tortoises and turtles are successful during the tortoise's treatment, then it is recommended that it be released at or near its capture point to continue to contribute to the persistence of the local tortoise population. Tortoises fatally injured or killed from Project-related activities will be submitted for necropsy as outlined in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoises (Gopherus agassizii) (Berry, 2001) at the Applicant's expense. Care will be taken by the AB in handling dead specimens to preserve biological material in the best possible state.

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Biological Resources (cont.)	
BIO-2	**General protection measures during construction:** a. ***Biological Resources Mitigation and Monitoring Plan (BRMMP)*****:** The BRMMP will outline steps to implement the protection measures; document their implementation; and monitor their effectiveness. The BRMMP will identify the terms and conditions of any permits associated with the Project, including, but not limited to, the USFWS §7 Biological Opinion, CDFG §2081 Incidental Take Permit, and CDFG Streambed Alteration Agreement. The BRMMP will be submitted to the BLM and USFWS for approval prior to the start of ground disturbance. b. ***Reporting*****:** As part of implementing protection measures, regular reports will be submitted to the relevant resource agencies to document the Project activities, mitigation implemented and mitigation effectiveness, and provide recommendations as needed. A schedule of reporting will be specific to individual plans. However, the Lead Biologist will submit monthly reports to the ECM during construction, annual comprehensive reports, and special-incident reports. The Lead Biologist will be responsible for reviewing and signing reports prior to submittal to the agencies. In addition to a regular reporting schedule, all encounters with desert tortoises will be reported to the Lead Biologist, who will report the following information in Monthly and Annual Reports: 1. Location (narrative and maps) and dates of observations; 2. General condition and health, including injuries and state of healing; 3. Diagnostic markings, including identification numbers or markers; and 4. Disposition (if moved). c. ***Worker Environmental Training*****:** The Applicant will prepare and implement site-specific Worker Environmental Training to inform Project personnel about the biological constraints of the Project. The training will be included in the BRMMP and will be developed and presented by a qualified Project biologist prior to the commencement of construction activity. All Project personnel must attend the training. The training will include information regarding the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the Project. Special emphasis will be placed on protection measures developed for the desert tortoise and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation. d. ***Construction-related Activities*****:** Existing roads will be utilized wherever possible to avoid unnecessary impacts. New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area and will minimize surface disturbance in native habitats, where practical. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Along the linear facilities, the anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and/or flagging prior to construction to avoid natural resources, where possible. Outside the Project boundaries, personnel will utilize established roadways (paved or unpaved) for traveling to and from the Project Area, including for transmission line construction. No work in unfenced and uncleared habitat will occur except under the direct supervision of a BM. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Best Management Practices will be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within 2 days of discovery. Additionally, fueling of equipment will take place within existing paved or contained areas and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. All vehicles and equipment will be in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Employees and contractors will look under vehicles and equipment for the presence of desert tortoises prior to movement. No equipment will be moved until the animal has left voluntarily or an AB removes it. e. ***Construction Speed Limits*****:** To minimize the likelihood for vehicle strikes of tortoises and other species during construction, a speed limit of 25 miles per hour will be established for travel on all dirt Project access roads. Signs will be posted at appropriate locations (for example, at Arizona crossings of drainages) to remind drivers to be aware of the potential for desert tortoise and other wildlife occurring on the roadways. f. ***Ground Excavations*****:** The Applicant will ensure that Project features located outside the permanently fenced sites, such as open trenches, pits, bores and other excavations that might trap, entangle, or constitute as pitfalls to desert tortoises and other wildlife, be filled in, fenced, covered, or otherwise modified at the end of each work day so they are no longer a hazard to desert tortoises and other wildlife. All excavations in tortoise habitat outside the permanently

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Biological Resources (cont.)	
BIO-2 (cont.)	fenced sites will be inspected for trapped desert tortoises at the beginning, middle, and end of the work day, at a minimum, but also will be continuously monitored by BMs as part of monitoring construction outside of fenced areas. Should a tortoise become entrapped, the AB will remove it immediately. These Project features will not need to be inspected if they are located within the permanently fenced solar plant site after the clearance surveys have been completed. However, any such Project features inside temporarily fenced locations that have been cleared of tortoises will be inspected daily for other wildlife. g. ***Construction Material Storage*****:** The Applicant will ensure that any construction pipe, culvert, or similar structure stored less than 8 inches above the ground, stored for one or more nights, and within desert tortoise habitat outside the permanently fenced sites, will be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored on the construction site or placed on pipe racks. These materials will not need to be inspected or capped if they are stored within the permanently fenced solar plant site after the clearance surveys have been completed or inside temporarily fenced locations. h. ***Hazardous Materials*****:** The Applicant will ensure all vehicles and equipment are in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, fuel, antifreeze, hydraulic fluid, grease, or other hazardous materials. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. Fueling of equipment will take place within existing paved roads, where possible, and not within or adjacent to drainages. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. The ECM, Lead Biologist, and BLM will be informed of any significant hazardous spills within 24 hours. i. ***Trash Abatement*****:** Trash and food items will be contained in secure, closed lid (raven- and coyote-proof) containers. Trash will be removed regularly (at least once a week) to reduce the attractiveness to the site to opportunistic tortoise predators such as common ravens (*Corvus corax*) and coyotes and to reduce the possibility of animals ingesting or becoming entangled in foreign matter. j. ***Roadkill Removal*****:** To preclude providing food to scavengers, including potential tortoise predators, such as ravens and coyotes, all road kills on construction entry roads will be collected, bagged, and put in a secure trash bin, daily. All personnel will be required to report road kills to a BM or AB daily, to ensure timely removal. k. ***Pets and Firearms*****:** The Applicant will prohibit workers from bringing pets or firearms to the Project. l. ***Plant and Wildlife Collection*****:** The Applicant will prohibit the intentional killing or collection of all native plant or native wildlife species, including, but not limited to desert tortoise. Workers will not disturb, capture, handle, or move animals, or their nests/burrows. Violations will be reported in the monthly and annual reports. m. ***Raven Management*****:** The Applicant will provide funds to the USFWS' range-wide raven monitoring and control program to support the more comprehensive goals of that program. These funds will be in lieu of extensive quantitative monitoring at the Project site. The amount will be determined through negotiation with USFWS. In addition, a Raven Management Plan will be designed and implemented to identify the conditions of concern specific to the Project that may attract ravens to the Project and to define a plan that will 1) monitor raven activity and 2) specify management and control measures. The monitoring effort is intended to provide qualitative and semi-quantitative data to ensure that ravens do not pose a threat to desert tortoises. n. ***Weed Management Plan:*** The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area. o. ***Water Application for Dust Control*****:** The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. A BM will patrol these areas to ensure water does not pool for long periods of time and potentially attract desert tortoises, common ravens, and other wildlife. p. ***Cleanup and Restoration; Revegetation Plan:*** The Applicant will ensure that all unused material and equipment will be removed upon completion of construction activities or maintenance activities conducted outside the permanently fenced sites (this includes non-emergency and emergency repairs). Upon completion, all construction equipment and refuse, including, but not limited to wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, metal or plastic containers will be removed from the site and disposed of properly. Any unused or leftover hazardous products will be properly disposed of off-site. The Applicant will prepare and implement a Revegetation Plan to restore temporarily disturbed areas.

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

<table>
<tr><th>APM No.</th><th>APM Description</th></tr>
<tr><td colspan="2">Biological Resources (cont.)</td></tr>
<tr><td>BIO-3</td><td>Protection measures during operation and maintenance: Road, transmission line, and pipeline maintenance activities are expected to occur during the life of the Project. To the extent possible, major road surface maintenance activities outside the solar plant site will be scheduled for the season with the least desert tortoise activity (typically November 1 through February 28), unless accompanied by an AB. During operation, all personnel who encounter a desert tortoise will immediately report the encounter to the ECM. An AB will monitor all major maintenance activities; minor maintenance (e.g., inspections) does not have to be accompanied by an AB. Only an AB may move tortoises during the operations phase and only if necessary. If feasible, all tortoises will be allowed to move into a safe area on their own. In order to prevent roadkills, any tortoise observed on the Project access road will be watched until it is safely off the road before the personnel can continue. If a desert tortoise is found inside the fenced solar plant site, an AB will be contacted immediately to translocate the desert tortoise from the solar plant site; in the interim, the tortoise will be captured, enclosed in a clean cardboard box with a lid, and held in a climate controlled situation until translocation by an AB, in accordance with details described in the McCoy Desert Tortoise Translocation Plan (BIO-1[d]). The ECM or AB will document the location (narrative and maps), date of observations, general condition and health (if known), including injuries and state of healing; diagnostic markings, including identification numbers or markers; and disposition, in the annual report.</td></tr>
<tr><td>BIO-4</td><td>Desert Tortoise Compensation: To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant will provide compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat in accordance with the NECO Plan (BLM, 2002). Approximately 4,500 acres of Category 3 habitat would be disturbed). This excludes 38 acres of sand dunes, agricultural areas, and areas that are currently developed or disturbed along the access road. Acreage of disturbance was based on the best available Project plans and would be adjusted, based on pre- and post-construction aerial photography, to reflect the final Project disturbance footprint. Because the construction of Unit 1, Unit 2, and the linear facilities would be phased, compensation obligations (e.g., security deposits and the actual funding or acquisition of mitigation land) should be apportioned as follows:
a. Unit 1: 2,259 acres at a 1:1 ratio;
b. Unit 2: 2,178 acres at a 1:1 ratio; and
c. Linear facilities: 106 acres at a 1:1 ratio.
The following qualitative criteria would be used to select compensation lands to ensure that they provide mitigation for the incidental take of desert tortoises:
a. Compensation lands should be part of a larger block of lands that are either already protected or planned for protection, or feasibly could be protected by a public resource agency or a private biological reserve organization.
b. Parcels should provide habitat that is as good as or better than the habitat being impacted by the Project. Preferably, the lands would comprise sufficiently good habitat that they are either currently occupied or could be occupied by the desert tortoise once they are protected from anthropogenic impacts and/or otherwise enhanced.
c. Parcels should not be subject to such intensive recreational, grazing, or other uses that recovery is rendered unlikely or lengthy. Nor should those invasive species that are likely to jeopardize habitat recovery (e.g., Sahara mustard [Brassica tournefortii]) be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration.
d. The parcels should be connected to occupied desert tortoise habitat or in sufficiently close proximity to known occupied tortoise habitat such that an unencumbered genetic flow is possible. Preferably, the existing populations of desert tortoise on these lands would represent populations that are stable, recovering, or likely to recover.
d. The parcels should be consistent with the goals, objectives, and recovery actions of an accepted recovery strategy (e.g., recovery plan) for the desert tortoise if possible.</td></tr>
<tr><td>BIO-5</td><td>Protection measures during decommissioning/closure: Project Decommissioning: The planned operating life of the Project is 30 years. In the event the Project permanently shuts down, and no other project will occupy the same industrial space, the Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase. Prior to decommissioning, a plan will be finalized and approved by the BLM. The Applicant shall retain an AB for the decommissioning phase of the Project to ensure that all environmental protection measures are implemented. The Applicant will submit the names and qualifications of all proposed biologists to the USFWS and BLM for review and approval at least 30 days prior to decommissioning activities and prior to initiation of any tortoise handling. Decommissioning activities will not begin until the ABs are approved by the aforementioned agencies.</td></tr>
</table>

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Biological Resources (cont.)	
Paleontological Resources	
PALEO-1	**To address potential paleontological impacts during the pre-construction phase:** a. Prior to the start of any Project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the Applicant shall ensure that a qualified paleontologist is available for field activities and is prepared to implement the conditions of approval. The qualified paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work. b. Prior to the start of construction, the qualified paleontologist shall prepare a worker's environmental awareness training program. The paleontological training program shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program also shall include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The training program shall be presented by a qualified paleontologist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.
PALEO-2	**To address potential paleontological impacts during the construction phase:** a. Qualified paleontologist or paleontological monitor shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas with a significant potential for fossil-bearing sediments to occur. All ground-disturbing activities in areas determined to have a high sensitivity shall be monitored on a full-time basis at the start of the Project. All ground disturbances in areas determined to have low to high sensitivity at depths of 1.5 m (5 feet) or greater shall also require monitoring on a full-time basis, initially. If no significant fossils are found, then the frequency of monitoring shall be adjusted at the discretion of the qualified paleontologist after an adequate amount of time is spent observing the geologic deposits in the Project area. No monitoring is required in areas determined to have a low sensitivity. b. Paleontological monitoring will include inspection of exposed rock units and collection of matrix to be testing for the presence of microscopic fossils. Paleontological monitors will have authority to temporarily divert excavations or drilling away from exposed fossils in order to efficiently and professionally recover the fossil specimens and collect associated data. Any paleontological fieldwork occurring on lands administered by the BLM would require a Paleontological Resources Use Permit issued by the BLM state office.
PALEO-3	**To address potential paleontological impacts during the post-construction phase**: The Applicant shall ensure preparation of a paleontological resources monitoring report by the qualified paleontologist. The report shall be completed following the analysis of any recovered fossil materials and related information. The report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; and a statement by the qualified paleontologist that project impacts to paleontological resources have been mitigated.
Hydrology and Water Quality	
HYDRO-1	**To address impacts to state jurisdictional washes**: a. The Project will be designed to ensure that post-development downstream hydrology will remain essentially the current downstream hydrology. b. The final locations of poles and spur roads associated with the linear facilities will be designed to be flexible so that drainages that cross the linear corridor will be avoided to the extent feasible. c. The Applicant proposes the following mitigation ratios to be used for the state jurisdictional waters that will be impacted by the Project:

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Hydrology and Water Quality (cont.)	
HYDRO-1 (cont.)	**SOLAR PLANT SITE**

Vegetation Community/Land Cover	Permanent Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres		
	Unit 1	Unit 2		Unit 1	Unit 2	Total
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0	1.5	3:1	0	4.5	4.5
Mesquite Bosque	0	0	3:1	0	0	0
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	2.8	38.1	1.5:1	4.2	57.2	61.4
Vegetated Ephemeral Channels (Vegetated with No Trees)	47.3	50.4	1:1	47.3	50.4	97.7
Unvegetated (approximately less than or equal to 5% cover)	10.2	15.1	1:1	10.2	15.1	25.3
Subtotal Ephemeral "Riparian" Drainages	**60.3**	**105.1**	-	**61.7**	**127.2**	**188.9**
Upland Vegetation						
Sonoran Creosote Bush Scrub	2198.7	2072.9	1:1	2198.7	2072.9	4271.6
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	0	0	3:1	0	0	0
Subtotal Upland Vegetation	**2198.7**	**2072.9**		**2198.7**	**2072.9**	**4271.6**
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0	0	0	0
Developed (No Vegetation)	0	0	0	0	0	0
Subtotal Other Cover Types	**0**	**0**	-	0	0	0
Subtotals for Solar Plant Site	**2,259**	**2,178**	**-**	**2260.4**	**2200.1**	**4460.5**
	4,437					

TABLE 2-7 (Continued)
APPLICANT PROPOSED MEASURES AND MANAGEMENT PRACTICES

APM No.	APM Description
Hydrology and Water Quality (cont.)	
HYDRO-1 (cont.)	**LINEAR FACILITIES** (see table below)

Vegetation Community/Land Cover	Gen-tie and Access Rd Impacts[1] (acres)		Distribution Line Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres
	Temporary	Permanent	Temporary	Permanent		
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0.5	0.7	0.1	0.8	3:1	6.3
Mesquite Bosque	0.2	0.2	0	0	3:1	1.2
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	0.0	0.0	0	0	1.5:1	0
Vegetated Ephemeral Channels (Vegetated with No Trees)	0.1	0.1	0	0	1:1	0.2
Unvegetated (approximately less than or equal to 5% cover)	0.2	0.1	0	0	1:1	0.3
Upland Vegetation						
Sonoran Creosote Bush Scrub	9.8	15.0	1.5	2.6	1:1	28.9
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	19.0	19.0	0	0	3:1	114
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0.3	2	0	0
Developed (No Vegetation)	14.5	21.8	0	0	0	0
Subtotal for Linear Facilities	**44.3**	**56.9**	**1.9**	**5.4**	**-**	**150.9**
Grand Total (Solar Plant Site and Linear Facilities)	**4545.5**				**-**	**4611.4**
Grand Total without Developed Area[2]	**4509.2**				**-**	**4575.1**

1 Includes impacts associated with poles, spur roads, gen-tie maintenance road, pull sites, laydown yard, and the main access road.
2 The developed area refers to a portion of the main access road.

APM No.	APM Description
Transportation and Traffic	
TRANS-1	**To minimize the potential for any peak AM or PM work day delays associated with the Mesa Drive, Black Rock Road, and Hobson Way intersections**: The Applicant would reduce the number of vehicle on these approaches by splitting construction crew with staggered start times to reduce peak arrivals by about half; encouraging carpooling by workers; and scheduling Project deliveries and truck trips for off-peak hours in order to avoid interference with the peak on-site worker AM and PM commute.

SOURCE: Tetra Tech EC, Inc., 2011c

2.3.2 Alternative 1: Proposed Action

2.3.2.1 Project-specific Deviations from Features Common to All Action Alternatives

Alternative 1 is distinct from the other action alternatives in the following ways: it would generate more electricity, use a gen-tie/access road alignment to the east of the BSPP, include a gen-tie connection between the Unit 1 and Unit 2 substations, result in greater permanent disturbance, and require more water. Alternative 1 would have the capacity to produce up to 750 MW of solar power. Unit 1 would generate approximately 250 MW from a solar array on the eastern side of the proposed solar plant site covering approximately 2,259 acres (1,782 acres of BLM land and 477 acres of private land) and Unit 2 would generate somewhere between 250 and 500 MW in a solar array adjacent to and west of Unit 1.

Under Alternative 1, the proposed gen-tie line would extend south from the proposed solar plant site approximately in parallel with the eastern and south-eastern border of the BSPP site until it diverts south from the BSPP toward the CRS south of I-10. This document refers to the proposed gen-tie line route as the “Eastern Route.” Approximately 123 gen-tie structures would be required for the Eastern Route, based on anticipated 800- to 1,000-foot spacing plus end structures for possible changes in direction. The Applicant would improve, and thereafter maintain and decommission approximately 2 miles of the north/south aligned, unimproved access road constructed for the BSPP before veering east, where the Applicant would construct, maintain, and decommission a new access road. The full length of the improved access road would serve as the gen-tie line maintenance road.

Under Alternative 1, overall construction-related water use is anticipated to be between 650 and 750 AF. Operation and maintenance of the Project would require approximately 15 to 22 AFY per Unit, plus an additional 1 AFY of potable water (31 to 45 AFY for the entire Project), based on the anticipated uses (including drinking water, showers, restroom facilities, panel washing, dust suppression, and 3,000-gallon dedicated fire supply, among other uses).

2.3.3 Alternative 2: Reduced Acreage Alternative

Under the Reduced Acreage Alternative (Alternative 2), common elements to the Proposed Action (Alternative 1) include: the Unit 1 solar field, the perimeter/fence maintenance road, Unit 1 substation, distribution line, water treatment area, O&M building, main access road, and the temporary laydown area, each of which is described above. The Reduced Acreage Alternative would not include construction of Unit 2. As a result, less permanent disturbance, less time to construct, and less water would be required than for Alternative 1.

As shown in Table 2-8, the Reduced Acreage Alternative would permanently disturb approximately 2,259 acres on the solar plant site (1,782 acres on BLM-administered land and 477 acres private land) and permanently disturb approximately 5.5 acres off-site. It is estimated that a notice to proceed for this alternative would be issued in Spring 2013, and that the construction schedule would be reduced relative to the proposed Project by up to 24 months. The workforce and types of

TABLE 2-8
ESTIMATED LAND DISTURBANCE ACREAGE FOR THE REDUCED ACREAGE ALTERNATIVE

Solar Plant Site	**Permanent (Ac)[a]**	
Solar Field (includes all acreage within the solar plant site covered by the solar panels and trackers, the inverter pad areas, maintenance roads between the solar arrays, any engineered drainage features, and the gen-tie line area within the solar plant site).	2,186.3	
Perimeter / Fence Maintenance Road (assumes 24 feet wide, approximately 8.5 miles within solar plant site fence)	23.3	
Fence Maintenance Road / Access Corridors (varies in width, approximately 8.5 miles outside solar plant site fence)	38.5	
On-site Substation	2.8	
Shared Water Treatment Area	3.0	
Operations and Maintenance Building (approximately 3,000 square feet) and Parking Area (approximately 10,000 square feet)	0.3	
Main Access Road within solar plant site boundary (assumes improved, 24 feet wide with 3-foot shoulders, approximately 1.25 miles)	4.8	
Subtotal for Solar Plant Site Acreage	**2,259.0**	
Area in and around natural drainages that would remain ungraded	0.0	
Temporary Laydown Area to be converted to permanent solar field area at end of construction[b]	15.0	
Total Acreage Within Solar Plant Site Fence	**2,259.0**	
Linear Facilities Outside Solar Plant Site Boundary	**Permanent (Ac)**	**Temporary (Ac)**
Distribution Line Poles (assumes 135 poles to be spaced about 150 ft apart, each requiring 25 ft by 25 ft temporary disturbance and 3 ft by 3 ft permanent disturbance)	0.0	1.9
Distribution Line Spur Roads (assumes 135 spur roads corresponding to every pole, 12 ft wide and approximately 50 ft long) [c]	1.9	0.0
Distribution Line Maintenance Road (assumes 24 ft wide with 3 ft shoulders, 1.0 miles (approximately 3 miles access is provided by the Main Access Road)	3.6	0.0
Subtotal for Linear Facilities Outside of Solar Plant Site Disturbed Acreage	**5.5**	**1.9**
Total On- and Off-site Permanent Disturbed Acreage	**2,264.5**	
Total Solar Plant Site (Within Fence) and Linear Facilities Acreage (Temporary and Permanent)	**2,266.4**	

NOTES:

a These acreages are based on the thin film tracking configuration as shown in Figure 2-3.
b This acreage is not included in totals because area is within land that would be affected by other solar plant site facilities.
c The temporary disturbance for distribution line poles does not include the permanent disturbance or the portion of the spur road that is coincident with the pole construction area.

SOURCE: McCoy Solar LLC, 2012a

equipment would be the same as Alternative 1, although the duration of equipment use required for the Reduced Acreage Alternative would be shorter. The total water usage during construction of the Reduced Acreage Alternative would be approximately 450 AF. Operation and maintenance-related water demand would be approximately half of what would be required for Alternative 1. Approximately 70 days would be required to complete panel washing per year. The demand for water to wash the panels would be approximately 67,000 to 99,000 gpd or 15 to 22 AFY. The amount of potable water required for up to 13 on-site staff members would be approximately 14,000 gallons per month.

2.3.4 Alternative 3: Reconfigured Gen-Tie/Access Road Alternatives

Alternative 1 would interconnect to the CRS via an approximately 14.5-mile-long eastern gen-tie line/access road route (Eastern Route). Alternative 3 describes two other gen-tie line/access road options that could connect the solar plant site to the CRS: an approximately 12.5-mile central gen-tie line/access road route (Central Route) and an approximately 15.5-mile western gen-tie line/access road route (Western Route). The Eastern Route, Central Route, and Western Route are shown in Figure 2-11. Either of the Reconfigured Gen-tie/Access Road Alternatives described in this section could support Alternative 1's solar plant site, resulting in a total of three gen-tie line route options for Alternative 1. By contrast, only the proposed Eastern Route or the Central Route could practically support the Reduced Acreage Alternative, resulting in a total of two gen-tie line route options for Alternative 2.

Any of the gen-tie line route options would use primarily a single set of monopole support structures to support a double-circuit gen-tie line. The Central Route and Western Route gen-tie support structures would be approximately 80 to 90 feet tall, depending on the location and local terrain, with final heights to be determined during detailed design. Like the proposed Eastern Route, the Central Route and Western Route structures would be spaced approximately 800 to 1,000 feet apart including end structures to accommodate changes in direction, would be made of concrete or a self-weathering steel with a matte finish, designed to be avian-safe and reinforced as necessary to withstand design loads. The lines would be insulated from the poles using porcelain insulators engineered for safe and reliable operation. Shield wires along the length of the line would protect against lightning strikes. Also like the proposed Eastern Route, direct embedded foundations would be used for tangent structures and anchor bolted, drilled shaft foundations for angle and dead-end structures. The corridor for each of the three gen-tie line route options would be approximately 100 feet wide (50 feet on either side of the line).

The approach to the Alternatives analysis for Alternative 3 is to examine only those portions of the Central and Western routes that differ from the proposed Eastern route, from each route's beginning within the solar plant site to the point where each of these lines meet, which is approximately 2 miles north of I-10, as shown in Figure 2-11. For the purposes of the Alternatives analysis, the Central Route would be 5.5 miles long and the Western Route would be 8.5 miles long, as compared to the 7.5 miles that would be unique to the Eastern route under Alternative 1. From the point at which the alternative routes meet until interconnection with the CRS, the alternative gen-tie line routes would be the same, and the effects of this portion are therefore analyzed only in the discussion of the Proposed Action.

2.3.4.1 Central Gen-tie/Access Road Route

The Central Route would be approximately 12.5 miles long, extending south from solar plant Unit 1, through the center of the BSPP site, and continuing toward the CRS south of I-10.

Approximately 100 gen-tie structures would be required. The maintenance road and spur roads associated with the Central Route would parallel the gen-tie line within the ROW for the length of the route. Like the maintenance road associated with the route, the maintenance road for the Central Route would be 24 feet wide with 3-foot shoulders and spur roads would be 15 feet wide. Construction and decommissioning of the gen-tie line maintenance road and spur roads would require up to a 50-foot-wide area of temporary disturbance – the same as the proposed Eastern Route.

2.3.4.2 Western Gen-tie/Access Road Route

The Western Route would be approximately 15.5 miles long, extending west and south from Unit 2, and then travel south and east toward the CRS, roughly paralleling the western border of the BSPP site, until veering east and turning south from the BSPP site toward the CRS south of I-10. Approximately 130 gen-tie structures would be required for the Western Route. No maintenance road would be collocated within the gen-tie line corridor.

2.4 Construction

Unit 1 and associated linear facilities (e.g., gen-tie line and access roads) would be constructed first, followed by the construction of Unit 2. Construction of Unit 1 and associated linear facilities would take approximately 22 months; construction of Unit 2 would take approximately 21 months. Since it is possible that there may be some delay between the time Unit 1 is fully operational and the time construction is commenced on Unit 2, the analysis in this document assumes a total construction period for Units 1 and 2 of up to 46 months. Construction activities would include site preparation; construction of the solar array, O&M building and substations; construction of the gen-tie line and telecommunications line; construction of the switchyard; and distribution line installation. The anticipated construction schedule and workforce are described in Section 2.4.10.

The construction of Unit 1 would include the access road, water treatment system, initial gen-tie line (consisting of the support towers and first circuit), O&M building, parking area, and the first 125 arrays of 2 MW blocks.

While the site does not lie within a state-established earthquake fault zone, it is located about 25 miles northeast of the active Aztec Mine Wash fault and approximately 60 miles east of the San Andreas Fault Zone. Because regional faults are capable of generating Magnitude 7 earthquakes and subjecting the MSEP to ground shaking up to 10 percent gravity, all structures would be designed to comply with the latest California Building Code or International Building Code requirements.

2.4.1 Site Preparation

All employees and contractors working in the field would be required to complete an environmental training session before beginning work. The program would include discussions on the biology, distribution, and ecology of any special-status species within the general area of construction. It also would cover the protection of historic and Native American-related resources. It would address penalties for noncompliance, reporting requirements, and the importance of compliance with all protection measures.

Pre-construction biological resource-related surveys would be completed and reported prior to beginning construction in a particular area. The biologist making the survey would file the results electronically in a standard report format. This report would be sent electronically or by fax directly to the agencies requesting it and to the Environmental Supervisor, who would enter the report into the database for the MSEP.

2.4.1.1 Surveying and Staking

Before commencing construction, the land surveyor would obtain or calculate benchmark data, grades, and alignment from plan information and provide control staking to establish the alignments, benchmarks, and elevations. The detailed design documents would provide data for the horizontal and vertical control points and horizontal alignments, profiles, and elevations. During construction, the surveyor would re-establish and set additional control points to maintain the horizontal and vertical control points as needed. Surveying and staking of environmental resources also would occur during construction as necessary.

2.4.1.2 Vegetation Removal, Grading, and Site Clearance

Before commencing construction, sensitive resource areas would be identified by a variety of methods including flagging, marking paint, signs, rope, or staking. Where not otherwise specified, a suitable method for mitigation and/or removal and relocation of a biologically sensitive resource would be selected by the biologist assigned to the Project. Once sensitive areas are marked, construction areas would be cleared and mowed of vegetation and miscellaneous debris. Grading activities primarily would be associated with the main access road and the gen-tie line, with lesser quantities associated with solar plant site buildings, parking areas, internal access roads, the Unit 1 and Unit 2 substations, and associated foundations.

Grading would consist of the excavation and compaction of earth to meet final design requirements. The use of either tracker technology or a fixed tilt mount would allow the existing topography to be essentially left in the existing (ungraded) condition because the height of the supports could be adjusted to level the PV modules. Also, because the site is nearly flat, localized grading would occur only where there are gullies or sections that otherwise would be impassable by vehicles. Although not anticipated, if larger areas require grading, a disc and roll technique would be used. The disc and roll technique is based on conventional farming practices using tractors to till the soil, which helps level out low spots, and then drum rollers to compact the soil. This technique would minimize the impacts of conventional cut and fill grading. Grading activities at the solar plant site would result in a balanced cut and fill quantity of earthwork to maintain the existing conditions to the extent practical.

Materials suitable for compaction would be brought to the site as needed and off-loaded at the designated road or building location for immediate dispersion. All materials would be clean of weeds, weed seeds, and hazardous materials. Materials unsuitable for compaction, such as mowed debris, would be removed and loaded immediately for subsequent disposal at an acceptable off-site location. Contaminated materials are not anticipated; however, if any such materials are encountered during excavation, they would be disposed of at the nearest appropriate facility in accordance with applicable laws, ordinances, regulations, and standards. It is estimated that not more than 1 cubic yard of construction debris and material waste would be generated each week, which would be accumulated in a construction debris container and hauled off monthly.

2.4.2 Solar Array Assembly and Construction

Construction of the tracker or fixed tilt assemblies may be conducted in a temporary building on-site at the construction laydown area, transported via truck to the proper location, and placed on the pre-installed supports. Alternately, the array assembly could occur adjacent to the installation point. Final assembly typically involves tractors, welding machines, and forklifts to place the trackers onto the support structures. During this work, multiple crews and vehicles would be working on the solar plant site, including flat bed trucks for transporting the arrays. Array construction vehicles would include small all-terrain vehicles (ATVs) or pick-up trucks to transport materials and workers on access roads and array aisles.

Depending on the final PV technology and vendor selected, the design of the tracker support structures could vary. Typical installations of this type are constructed using steel piles or concrete foundations. Steel piles may be driven, screwed, or grouted. Driven steel pile foundations typically are galvanized and used where high load bearing capacities are required. The pile is driven using a hydraulic ram where up to two workers are required. Soil disturbance would be restricted to the pile insertion location with temporary disturbance from the hydraulic ram machinery, which is about the size of a small tractor. Screw piles, if used, would be driven into the ground with a truck-mounted auger requiring two or three personnel. Screw piles create a similar soil disturbance footprint as driven piles. Grouted steel piles, if used, would require pre-drilling with auger equipment so that the pile could be inserted into the cleaned hole. The pile then would be grouted into place from bottom to top until grout flows out of the top of the hole. Soil disturbance would be the same as the previous steel pile descriptions with additional disturbance from the soil removal and insertion of grout at the pile location. Concrete foundations avoid ground penetration by withstanding the design loads from the weight of the concrete itself. Concrete requires time to cure and can be pre-cast and transported to the site or poured in place for installation. Concrete foundations reduce the ground penetration, but increase the permanent disturbance.

The design method and installation time of the support structures would depend on the support structure and block design with driven piles being the fastest installation method. Final construction and installation details would be determined in the detailed design of the Project.

Solar PV panels would be manufactured off-site and shipped to the site ready for installation. Concrete pads for the drive motors would be pre-cast and brought to the site via flatbed truck. Once most of the components have been placed on their respective foundations, the electricians and instrumentation installers would run the electrical cabling throughout the solar field. After the equipment is connected, electrical service would be verified, motors checked, and control logic verified. The various hydraulic systems would be charged with their appropriate fluids and startup testing would proceed. As the solar arrays are installed, the balance of the plant would continue to be constructed and installed and the electrical power and instrumentation would be placed. Once all of the individual systems have been tested, integrated testing of the MSEP would occur.

2.4.3 O&M Building and Substation Construction

The Unit 1 and Unit 2 substations each would take approximately 4 months to construct. Each substation would consist of two 230 kV, 1200A SF6 circuit breakers, along with approximately six 1200A vertical break disconnect switches and rigid bus on post insulators and fittings. Construction work within the substation sites would include site preparation and installation of substructures and electrical equipment. Substation materials and equipment would be delivered to and stored at the respective substation site, as required, during construction.

Galvanized steel would support most of the equipment. Concrete foundations and embedments for equipment would be installed, requiring trenching machines, concrete trucks and pumpers, vibrators, forklifts, boom trucks, and large cranes. Above-ground and below-ground conduits from this equipment would run to a control enclosure that will house the protection, control, and automation relay panels. A station service transformer would be installed for auxiliary AC power requirements. Battery banks would be installed inside the enclosure for DC power requirements of the switchyard. Battery chargers would be included.

For personnel safety and equipment protection during faulted conditions, a ground grid would be installed in the substation. This would consist of #4/0 Br Cu conductors meshed and buried 24 inches below ground. Each piece of equipment and supporting structure would be electrically connected to the ground grid.

Crushed rock would cover the expanded area of the substation. Adequate perimeter lighting would be provided. It is expected that construction of the entire switchyard would be completed in 3 to 4 months and would be designed and constructed within the limits of prevailing SCE standards/requirements.

The O&M building would be a pre-engineered metal building with metal siding and roof. The building would be supported on reinforced concrete mat foundations or individual spread footings as determined during detailed design. The floor would consist of a reinforced 3,000-square-foot concrete slab corresponding to the dimensions of the building. The prefabricated steel building structure then would be assembled. Exterior finishes would be constructed as the mechanical and electrical systems are being built inside. Interior finishing work would follow, and final fixtures and equipment would be installed.

2.4.4 Gen-tie Line Construction

The gen-tie line would be installed on a set of monopole and/or H-frame structures, designed for double circuit use. Poles would be 70 to 145 feet tall, spaced approximately 800 to 1,000 feet apart between the substation on the solar plant site to the switchyard at CRS for Unit 1 or directly into the CRS for Unit 2. Each pole would require approximately 50 feet by 50 feet of temporary disturbance and 12 feet by 12 feet of permanent disturbance. Porcelain insulators and shield wires would be installed to protect personnel and equipment from lightning strikes and other hazards.

The gen-tie line would be constructed for operation at 230 kV, the nominal operating voltage of the regional transmission system. The use of 230 kV as the targeted design voltage would be consistent with the industry use of the 230 kV term to describe the nominal voltage for this class of system. The tower designs would be engineered to provide design limits for purposes of the electric and magnetic field studies and in accordance with the current standards. Crossings of the BSPP gen-tie line and I-10 or other transmission lines would occur in accordance with the most current revision of the Institute of Electrical and Electronics Engineers (IEEE) National Electric Safety Code and the CPUC's Rules for Overhead Line Construction, General Order 95 (GO-95).

The gen-tie line would be constructed with crews working continuously along the route, with construction of the monopoles and first circuit (i.e., Unit 1 conductors) requiring a peak workforce of approximately 34 workers. Gen-tie line construction would involve the following activities:

1. Preparation of laydown areas
2. Surveying and site delineation staking
3. Access road and spur road construction
4. Pole site preparation and installation
5. Circuit installation
6. Cleanup and site reclamation

Circuit stringing and cleanup and site restoration activities are described below. Several construction crews would operate simultaneously at different locations along the gen-tie line. Construction would last approximately 4 days at each pole location. The following subsections describe in more detail the construction activities related to the proposed gen-tie line.

2.4.4.1 Laydown Areas

Preparation of the laydown areas would involve a pre-construction reconnaissance of the area, staking of the laydown boundaries, mowing or grubbing of the laydown area (which may require use of 365 HP Scraper Cat or equivalent equipment), some possible light grading (which would require use of a Dozer Cat D6R or equivalent), construction of parking area, installation and construction of temporary construction buildings or trailers and construction and installation of storage areas and facilities. Construction of the laydown area would take up to 1 month and a peak of 38 on-site personnel.

2.4.4.2 Road Work

The construction, operation and maintenance, and decommissioning of the proposed gen-tie line would require that heavy vehicles be able to access the tower sites along the road. The Applicant would use existing or otherwise planned access roads to the extent possible and anticipates that new spur roads would be required. Construction of the proposed roads would involve a pre-construction reconnaissance of the roadways, staking of the road boundaries, clearing and grubbing of the roadways (which would require use of 365 HP Scraper Cat or equivalent equipment), light grading (which would require use of a Dozer Cat D6R or equivalent), installation of rock road base, and installation of asphalt paving (which would require use of a Cat BG600D Paver and Cat CB—434D Roller Vibrator). Construction of the roadways would take up to 18 alternating months and a peak of 24 personnel.

2.4.4.3 Pole Site Work and Installation

At each site, a work area would be required for the tower footing location, structure assembly, and the necessary crane maneuvers. Each such work area (one per pole) would be approximately 50 feet by 50 feet. Each area would be cleared of vegetation and graded only to the extent necessary to facilitate the safe operation of heavy construction vehicles and equipment.

Installation of new steel or concrete tower structures to support the 230 kV circuit would begin with the excavation of foundations approximately 6 feet in diameter and 20 feet deep. A vehicle-mounted power auger or backhoe would be used to excavate for the structure foundation. The temporary disturbance from construction of each tower employing an auger would be approximately 50 feet by 50 feet while the permanent disturbance would be less than 12 feet by 12 feet. Although not expected, the use of a backhoe or blasting could be necessary in some instances because of specific geologic conditions. In the unlikely event blasting is necessary, conventional or plastic explosives would be used. Industry standard safeguards, such as blasting mats, would be employed when adjacent areas require protection. If blasting is used, the temporary disturbance area would be isolated and minimized to disturb only the area required to construct.

Once the foundation holes have been cleaned, towers with preassembled insulators, hardware, and stringing sheaves would be lifted into position, inserted into the foundation holes, and gravel or concrete would be poured to backfill the hole and create a foundation. Any native soil not used to backfill would be spread around the pole. The total amount of temporary and permanent disturbance associated with gen-tie line installation would depend on the route selected. Total temporary disturbance can be calculated by multiplying the number of poles to be installed by the disturbance associated with the method of excavation used. For permanent disturbance, the gen-tie line would result in total permanent disturbance area of approximately 0.5 acres off-site. Erecting each tower structure would take approximately 6 to 8 hours.

2.4.5 Conductor Stringing

Transmission conductor stringing would consist of the installation of the circuits and ground wires needed to connect the electricity generated at the MSEP to the grid. It would begin at the solar plant substations, where circuits would be strung aboveground from the step-up transformer, through circuit breakers and off-site to the switchyard (for Unit 1) or directly into the CRS (for Unit 2). Gen-tie line conductor stringing activities are illustrated in Figure 2-10.

Pilot lines would be pulled from structure to structure and threaded through the stringing sheaves at each structure. This work would employ the use of a helicopter to position linemen on each structure for hanging stringing wheels and guide rope. The conductors then would be pulled back through the stringing wheels using a machine located on the ground. This process would be repeated until all of the conductors are pulled through all sheaves. During the construction of Unit 2, the second circuit would be strung in a similar manner on the Unit 1 gen-tie towers. Approximately 54 pulling sites would be required to install the conductors along the gen-tie line route. These sites would be accessed from the access or spur roads. The shield wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end, approximately 1 mile apart. Tensioners and/or pullers, line trucks, wire trailers, and tractors needed for stringing and anchoring ground wires or conductors would be necessary at each pulling site. The tensioner, in concert with the puller, would maintain tension on the shield wires or conductors while they are pulled through the structures.

Crossing structures consisting of H-frame wood poles temporarily would be placed on either side of obstacles, such as roadways, to prevent ground wire, conductors, or equipment from falling on the obstacle. They would be removed when conductor installation is complete. The same equipment would be used to erect the crossing structures and gen-tie towers. Crossing structures may not be required for small roads or other areas where suitable safety measures such as barriers, flagmen, or other traffic controls could provide necessary safe guards.

2.4.6 Telecommunications Line Installation

As required for connection and interaction with the electrical grid, two independent telecommunication lines would be installed. The primary telecommunication line would be strung at the top of the gen-tie support towers and would run to each unit’s substation. The secondary line would be installed underground within the disturbance area of the access or maintenance roads. The primary telecommunication line would be installed as part of the gen-tie line construction for Unit 1. The secondary line could be installed with either unit. Approximately 3 months would be required to install these lines.

2.4.7 Colorado River Substation Switchyard Construction

The Applicant’s contractors would construct the switchyard, including site preparation and installation of substructures and electrical equipment. Switchyard construction would be staged from the gen-tie line laydown area and the switchyard site. Following pre-construction activities, the switchyard site would be fenced for security. Underground Service Alert would be contacted to mark the locations of existing buried utilities in the vicinity. Switchyard materials and equipment would be delivered to and stored at the switchyard site, as required, during construction. Conventional grading and construction equipment would be used. Minor excavation would provide concrete footings for the switchyard equipment. The switchyard site would be graveled with crushed rock for grounding and employee safety purposes.

2.4.8 Distribution Line Installation

SCE would install the distribution line using similar construction methods and equipment as the Applicant would use to install the telecommunications line (see Section 2.4.6). The exact routing of the distribution line would be finalized in consultation with SCE; however, the proposed route is shown on Figure 2-2.

2.4.9 Clean Up and Site Reclamation

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Approved enclosed refuse containers would be used throughout Project work areas. Refuse and trash would be removed from construction sites no more frequently than once per month by a commercial waste facility for suitable disposal to an appropriately licensed facility located within 20 miles of the Project site. Open burning of construction trash would be prohibited.

2.4.10 Construction Schedule, Equipment, and Work Force

The total site construction period would consist of approximately 46 total months. Construction of the Project would occur in two sequential stages. Construction of Unit 1 and the linear facilities would occur first and is scheduled to begin following the receipt of the NTP. The proposed construction schedule and estimated workforce are shown in Table 2-9.

TABLE 2-9
PROPOSED CONSTRUCTION SCHEDULE AND WORKFORCE

Month	Construction Activities	Anticipated Number of Worker-Days
YEAR 1		
Month 1	Fence Construction - Unit 1	954
Month 2	Fence Construction, Tortoise Clearance – Unit 1	954
Month 3	Clear & Grub, Water supply construction, project delineation, entrance, parking and staging area, materials storage area, concrete washout construction, grading – Unit 1	1947
Month 4	Clear & Grub, Water supply construction, project delineation, entrance, parking and staging area, materials storage area, concrete washout construction, grading, road construction – Unit 1	2244
Month 5	Clear & Grub, Water supply construction, project delineation, entrance, parking and staging area, materials storage area, concrete washout construction, grading, road construction, PV construction – Unit 1	5028
Month 6	Clear & Grub, Water supply construction, project delineation, entrance, parking and staging area, materials storage area, concrete washout construction, grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	5450
Month 7	Clear & Grub, grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	5892
Month 8	Clear & Grub, grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	6154
Month 9	Clear & Grub, grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	6154
Month 10	Clear & Grub, grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	6154
Month 11	Grading, road construction, PV construction – Unit 1; Construct Gen-Tie Line	6154
Month 12	Grading, road construction, PV construction, construction substation, construction ops building, construction water storage tank – Unit 1; Construct Gen-Tie Line	7889
YEAR 2		
Month 1	PV construction, construction substation, construction ops building, construction water storage tank – Unit 1; Construct Gen-Tie Line	7889

TABLE 2-9 (Continued)
PROPOSED CONSTRUCTION SCHEDULE AND WORKFORCE

Month	Construction Activities	Anticipated Number of Worker-Days
YEAR 2 (cont.)		
Month 2	PV construction, construction substation, construction ops building, construction water storage tank – Unit 1	7889
Month 3	PV construction - Unit 1	5812
Month 4	PV construction - Unit 1	5812
Month 5	PV construction - Unit 1	5812
Month 6	PV construction - Unit 1	5812
Month 7	PV construction - Unit 1	5812
Month 8	PV construction - Unit 1	5812
Month 9	PV construction - Unit 1	5878
Month 10	PV construction, commissioning & testing - Unit 1	5878
Month 11	Commissioning & testing - Unit 1	5878
Month 12	Commissioning & testing - Unit 1	5678
YEAR 3		
Month 1	Commissioning & testing - Unit 1; Fence construction – Unit 2	3889
Month 2	Fence construction, tortoise clearance – Unit 2	3889
Month 3	Clear & grub, grading – Unit 2	6712
Month 4	Clear & grub, grading, road construction – Unit 2	10106
Month 5	Clear & grub, grading, road construction, PV construction – Unit 2	10106
Month 6	Clear & grub, grading, road construction, PV construction, construct substation – Unit 2	13200
Month 7	Clear & grub, grading, road construction, PV construction, construct substation – Unit 2	13200
Month 8	Clear & grub, grading, road construction, PV construction, construct substation – Unit 2	13200
Month 9	Clear & grub, grading, road construction, PV construction – Unit 2	10106
Month 10	Clear & grub, grading, road construction, PV construction – Unit 2	10106
Month 11	Grading, road construction, PV construction – Unit 2	10106
Month 12	Grading, road construction, PV construction – Unit 2	10106
YEAR 4		
Month 1	Grading, PV construction – Unit 2	10106
Month 2	Grading, PV construction – Unit 2	10106
Month 3	PV construction – Unit 2	10106
Month 4	PV construction – Unit 2	10106
Month 5	PV construction – Unit 2	10106
Month 6	PV construction – Unit 2	10106
Month 7	PV construction – Unit 2	10106
Month 8	PV construction, commissioning & testing – Unit 2	10106
Month 9	PV construction, commissioning & testing – Unit 2	10106
Month 10	PV construction, commissioning & testing – Unit 2	10106

SOURCE: McCoy Solar, LLC, 2011a

The total number of construction workers (consisting of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel) would range between 43 and 600, with the peak number of workers (600) on site during months August, September, and October of 2015. Experience has shown that special circumstances could arise that warrant an increased number of on-site workers for a short period of time. The analysis in this document assumes that up to 750 workers could be on site for a few weeks at a time. Otherwise, the average on-site construction workforce would consist of approximately 341 construction, supervisory, support, and construction management personnel.

2.4.10.1 Construction Equipment

During construction, a variety of equipment and vehicles would be operating at the solar plant site and along the linear facilities. Table 2-10 provides a list of the type and number of equipment and vehicles expected to be required to construct each of component of the Project.

2.4.10.2 Construction Hours

Construction generally would occur between 7 a.m. and 7 p.m., Monday through Friday. Additional hours could be necessary to make up schedule deficiencies or to complete critical construction activities. For example, during placement of concrete or during hot weather, it could be necessary to start work earlier than 7 a.m. to avoid some activities during high ambient temperatures. During the startup phase of the MSEP (Months 22-25 and 44-46), equipment and system testing and similar activities could occur 24 hours per day, 7 days per week.

2.4.10.3 Construction-related Training

Construction would be undertaken sequentially in accordance with a Construction Plan that would include the final design documents, work plan, health and safety plans, permits, project schedule, and O&M manuals. Construction Plan documents would relate at least to the following:

1. Environmental health and safety training
2. Site security measures
3. Site first aid training
4. Construction testing (non-destructive examination, hydro, etc.) requirements
5. Site fire protection and extinguisher maintenance, guidance, and documentation
6. Furnishing and servicing of sanitary facilities records
7. Trash collection and disposal schedule/records
8. Disposal of hazardous materials and waste guidance in accordance with local, state, and federal regulations

2.4.10.4 Construction Traffic

As the site work progresses, equipment and materials would arrive and be staged in the order of installation. Construction materials, other equipment and materials would be delivered by truck. Delivery of construction equipment and MSEP components would be coordinated with local

TABLE 2-10
CONSTRUCTION EQUIPMENT BY PROJECT COMPONENT

Equipment	Construction Phases						
	Site Preparation	Civil Improvements	Construction of Solar Array Unit 1	Construction of Solar Array Unit 2	Installation of Gen-tie Line, Poles	Substation and O&M Building	Switchyard
Backhoes	1		1	1		1	1
Cranes			2	2	1	1	1
Vibratory Post Drivers			2	2			
Fork Lifts			2	2	2	2	1
Dozers		1	1	1	1		
Excavator	1	2					
Grader	1	2				1	1
Loaders, Rubber Tired	1	1	2	2	1	2	2
Rollers		1					
Scrapers	1	2					
Trenchers			4	4			
Dump Truck			1	1			
Water Truck	5	3	2	2	1	1	1
Portable Generators	1	2	2	2	1	1	1
Concrete Truck			10	10	1	10	2
Flatbed Truck	10		10	10	2	10	5
Heavy Duty Delivery Truck	5	5	110	110	2	10	5
Light Weight Truck	10	20	20	20	10	20	20

agencies to ensure compliance with California Department of Transportation (Caltrans), County, and BLM requirements. Weight and height restrictions would be verified and any required permits would be obtained by the delivery service. Only the main transformers are expected to require heavy haul (oversize) transport and transportation permits. Transportation of hazardous materials to the solar plant site would comply with all Department of Transportation, USEPA, DTSC, California Highway Patrol, and the California State Fire Marshal regulations for the transportation of hazardous materials.

I-10 would provide the main access route to the solar plant site, regardless of whether vehicles come from the east or west. Construction workers as well as equipment, supplies, and other deliveries would travel/be transported to the site by the same access described in Section 2.3.1.3. Gravel, aggregate, and concrete needs would be supplied either from Ehrenburg, Arizona (20 miles from the solar plant site) or from Indio, California (100 miles from the solar plant site), Approximately 5,900 deliveries (50 mile round trip each) would be required to deliver these materials to the site. Approximately 10 to 20 deliveries per day (50 mile round-trip each) with a peak of approximately 25 to 30 deliveries per day would be required for the duration of the 46-month construction period. Peak truck travel would occur during the delivery of the modules, trackers, and cabling, and the placement of concrete during plant foundation construction. Truck deliveries would not interfere with the peak on-site worker commute time frame.

Construction worker traffic would vary according to workforce needs (see Table 2-9). Workers would park in designated areas on the solar plant site. Parking along the shoulders of adjacent streets would not be allowed. The Applicant would encourage construction workers to carpool to reduce vehicle trips to the site.

2.4.10.5 Construction Power

Temporary construction power required for the construction offices, laydown area, and the solar plant site would be supplied by the proposed distribution line or a temporary on-site generator. Construction power would be provided to the solar field provided by portable generators.

2.5 Project Operation and Maintenance

2.5.1 Operation and Maintenance Workforce

Approximately 20 permanent, full-time personnel would be employed at the solar plant site during daytime working hours assuming both units are operational. Temporary personnel would be employed, as needed, during seasonal periods when panel washing is required. Monthly visual inspections and annual (minimum) preventive maintenance would be performed. In accordance with United States Department of Labor, Occupational Safety and Health Administration (OSHA) safety regulations, at least two qualified personnel would be present during all energized electrical maintenance activities at the facility. Site security systems would be monitored regularly, by on-site personnel and an off-site 24-hour Remote Operations Center.

2.5.2 Automated Facility Control and Monitoring System

The proposed facility control and monitoring system would have two primary components: an on-site SCADA system and the accompanying sensor network. The on-site SCADA system would offer near real-time readings of the monitored devices, as well as control capabilities for the devices where applicable. Off-site monitoring/data trending systems would collect historical data for remote monitoring and analysis. For example, personnel at the Remote Operations Center would provide continuous 24/7/365 monitoring coverage of Project facilities and would respond to real-time alerts and system upsets using advanced monitoring applications that reside on the servers in their network.

2.5.3 Panel Washing

PV panel washing would be performed by seasonal maintenance crews in the fall and spring, taking approximately 35 days to complete per Unit. Up to 99,000 gpd would be required for this purpose (up to 22 AFY per Unit). Several types of systems are currently available; most involve spraying filtered water onto the modules from a portable tank mounted in the bed of a pickup truck. Sometimes brushes, rods, or circular cleaning heads are used to remove debris. Surfactants would not be used in these procedures. The process water would be allowed to run off the modules and evaporate or percolate into the ground.

2.5.4 Road Maintenance

Paved MSEP roads would be maintained to preserve the asphalt surface from degradation. Maintenance would include seal coating the asphalt surface every 2 to 5 years to prevent decay and oxidization. Potholes or other damage would be repaired as soon as practical.

Unpaved roads would be maintained regularly to control the flow of water on and around the road, remove obstacles, and maintain a solid surface. Maintenance would be completed by conducting regular surveys to inspect the conditions of the road surfaces; blading, grading or compacting the road surfaces to preserve a minimally sloped and smooth planed surface; and applying dust palliatives or aggregate base as needed to reduce dust and erosion.

2.6 Decommissioning and Site Reclamation

2.6.1 Decommissioning of Applicant's Facilities

2.6.1.1 Solar Plant Site Facilities

The Applicant is expected to receive authorizations and permits with 30-year terms. At the end of the term, including any extensions, the MSEP would cease operation. At that time, the facilities would be decommissioned and dismantled and the site restored. Decommissioning activities would require approximately 6,000 truck trips, a workforce of approximately 300 workers, and would take approximately 24 months to complete. Activities would include:

1. Dismantling and removal of all aboveground equipment (solar panels, tracker units, transformers, MSEP Substation, O&M building, switchyard, etc.)
2. Excavation and removal of all belowground cabling
3. Removal of posts
4. Removal of roads (both graveled and paved, including the aggregate base)
5. Break-up and removal of concrete pads and foundations
6. Pumping and break-up of septic tank (backfilled with clean soil) and abandonment of leach field
7. Scarification of compacted areas

Because it is expected that the proposed PV panels would continue to have useful electricity-producing capacity after the MSEP authorizations expire, the Applicant anticipates reusing and then recycling them at the end of their useful life. Reuse would involve removal of the panels from the MSEP site for sale into a secondary PV panel market.[6] The majority of the remaining MSEP components would be recycled. Equipment, such as drive controllers, inverters, transformers, and switchgear, either could be re-used or their components recycled. Poured concrete pads would be removed and recycled or reused as clean fill. Appropriate hazardous materials control and erosion control measures would be used throughout the decommissioning process. It is anticipated that such controls would be substantially similar to those implemented during construction.

2.6.1.2 Gen-tie Line, Telecommunications Lines and Switchyard

Decommissioning would be competed using traditional heavy construction equipment, such as front end loaders, cranes, track mounted and rubber tired excavators, and motor graders. Dismantling would proceed according to four general stages: The first stage would consist of dismantling and demolishing above-ground structures. The second stage would consist of removing concrete foundations, etc. from within 3 feet of final grade. The third stage would consist of excavating and removing soils and broken concrete from the site. The final stage would consist of surface contouring to return the disturbed areas to near original conditions. The gen-tie line would be left in place if it is serving other projects. If it is decommissioned, approximately four workers with a backhoe, dump truck, and flatbed truck would complete the task in approximately 3 weeks.

[6] The Applicant expects a robust global market for used PV panels based on the rise in global electricity demand, increase in electricity prices, and anticipated acceleration of demand for solar energy for decades to come. Third world off-grid applications also are expected to boom as used PV panels become available at a fraction of the current cost.

2.6.2 Decommissioning of Southern California Edison's Distribution Facilities

SCE would own and operate the proposed distribution line. If SCE has no additional obligations or legal rights to maintain and operate the line on the Project site, SCE could decommission and dismantle its own facilities and restore the site. If it is decommissioned, approximately four workers could complete the task with a backhoe, dump truck, and flatbed truck in approximately 3 weeks. Activities would include removing the distribution lines and poles from the interconnection point to the MSEP substations and backfilling the holes left by the pole removal with on-site native soil.

2.7 Alternative 4: No Action Alternative

Under the No Action Alternative, the BLM would not authorize a ROW grant for the Project or amend the CDCA Plan to identify the site as suitable for the proposed Project. Because the Project would not be approved, no new structures or facilities would be constructed, operated and maintained, or decommissioned on the site, and no related ground disturbance or other Project-specific impacts would occur. The BLM would continue to manage the land under its land use jurisdiction consistent with the site's multiple use classification as described in the CDCA Plan as it was amended by the Solar PEIS ROD.

The Solar PEIS ROD designated the Riverside East SEZ (including the MSEP application area) as a priority area for commercial-scale solar development. Accordingly, it is very likely that commercial-scale solar development would be promoted within the ROW application area even if the MSEP ROW application were denied. All other uses allowable on CDCA MUC-L lands would continue to be available if the BLM selected the No Action Alternative. However, because the configuration, nature, location, resource intensiveness, and other factors related to any future solar energy project are unspecified and uncertain, the BLM cannot predict the environmental consequences that might result from such development, and so finds that particular impacts are too speculative to evaluate meaningfully in this PA/FEIS. Further, progress toward achievement of the federal mandates under Executive Order 13212, Secretarial Order 3285A1, and the EPAct would be deferred to development in other areas at a later date.

2.8 Agency Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the Lead Agency's preference of action among the Proposed Action and alternatives. A NEPA Lead Agency may select a preferred alternative for a variety of reasons, including the agency's priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14(e)), the BLM has identified Alternative 1, the Proposed Action, as the preferred alternative, with the exception of the proposed gen-tie line, for which the Alternative 3 Central Route is preferred. The approximate disturbance acreage for the preferred alternative associated with each proposed land use is provided in Table 2-11.

TABLE 2-11
ESTIMATED LAND DISTURBANCE ACREAGE FOR THE AGENCY PREFERRED ALTERNATIVE

Solar Plant Site	**Unit 1 (Ac)[a]**	**Unit 2 (Ac)[a]**
Solar Field (includes all acreage within the solar plant site covered by the solar panels and trackers, the inverter pad areas, the maintenance roads between the solar arrays, any engineered drainage features and the gen-tie line area within the solar plant)	2,186.3	2,041.0
Perimeter / Fence Maintenance Road (assumes 24 ft wide, approximately 8.5 miles for Unit 1 and 6.5 miles for Unit 2 within solar plant site fence)	23.3	18.7
Fence Maintenance Road / Access Corridors (varies in width, approximately 13 miles outside solar plant site fence)	33.3	19.5
On-site Substations	2.8	2.8
Shared Water Treatment Area	3.0	0.0
Shared O&M Building (approximately 3,000 square ft) and Parking Area (approximately 10,000 square ft)	0.3	0.0
Main Access Road within solar plant site boundary (assumes improved, 24 ft wide with 3 ft shoulders, approximately 1.25 miles up to Unit 1 and 1.5 miles between Unit 1 and 2)	10.0	0.0
Unit Subtotal for Solar Plant Site Permanent Disturbed Acreage	***2,259.0***	***2,082.0***
Total On-site Permanent Disturbed Acreage	**4,341.0**	
Temporary Laydown Area, Unit 1/Unit 2 (converted to permanent solar field area at end of construction)[b]	15.0[b]	13.0[b]
Area in and around natural drainages that will remain ungraded	0.0	96.0[c]
Subtotal for Acreage within Solar Plant Site Fence	***2,259.0***	***2,178.0***
Total Acreage Within Solar Plant Site Fence	**4,437.0**	
Linear Facilities Outside Solar Plant Site Boundary (Central Route)	**Permanent (Ac)**	**Temporary (Ac)**
Main Access Road outside of the solar plant site boundary (assumes improved, 24 ft wide road with 3 ft shoulders, 50 ft wide temporary disturbance, approximately 4 miles, not including already disturbed access road)[d]	14.5	9.7
Gen-tie Support Poles (assumes 50 monopoles and 52 H-frame poles to be spaced about 800 ft apart, each foundation requiring 50 ft by 50 ft temporary disturbance and 12 ft by 12 ft permanent disturbance)[e]	0.5	8.3
Gen-tie line Maintenance Road (assumes 24 ft wide with 3 ft shoulders, 50 ft wide temporary disturbance, approximately 7.75 miles (approximately 4 miles access is provided by the Main Access Road), assumes the BSPP gen-tie line access road would be shared along the length of the MSEP gen-tie line that parallels the BSPP gen-tie line)[d]	28.2	18.8
Gen-tie line Spur Roads (assumes 15 ft wide permanent disturbance, 50 ft wide temporary disturbance, 26 spur roads 220 ft long near airport, 24 spur roads 100 ft long near CRS, no spur roads assumed along main access road north of the BSPP gen-tie line crossing)	2.8	6.5
Gen-tie line Construction Laydown/Assembly Areas	0.0	3.0
String Pulling Sites (assumes 54 pulling sites 100 ft by 300 ft, not including pole disturbances listed previously)	0.0	34.5
Switchyard adjacent to CRS	2.0	0.0
Telecommunications Lines	0.0	0.0

TABLE 2-11 (Continued)
ESTIMATED LAND DISTURBANCE ACREAGE FOR THE AGENCY PREFERRED ALTERNATIVE

Linear Facilities Outside Solar Plant Site Boundary (cont.)	Permanent (Ac)	Temporary (Ac)
Distribution Line Poles (assumes 135 poles to be spaced about 150 ft apart, each requiring 25 ft by 25 ft temporary disturbance and 3 ft by 3 ft permanent disturbance)	0.0	1.9
Distribution Line Spur Roads (assumes 135 spur roads corresponding to every pole, 12 ft wide and approximately 50 ft long)[e]	1.9	0.0
Distribution Line Maintenance Road (assumes 24 ft wide with 3 ft shoulders, 1.0 miles (approximately 3 miles access is provided by the Main Access Road)	3.6	0
Subtotal for Linear Facilities Outside of Solar Plant Site Disturbed Acreage	***53.5***	***82.7***
Total for Linear Facilities Outside of Solar Plant Site	**136.2**	
Total Solar Plant Site and Linear Facility Permanent Disturbed Acreage	**4,394.5**	
Total Solar Plant Site (Within Fence) and Linear Facilities Acreage (Temporary and Permanent)	**4,573.2**	

NOTES:

[a] These acreages are based on the thin film tracking configuration as shown in **Figure 2-3**.
[b] These acreages are not included in totals because area is within land that would be affected by other solar plant site facilities.
[c] The 96acres in and around drainages within Unit 2 would remain undisturbed; however, because this area currently is shown within the fence of Unit 2, it is considered permanently disturbed for purposes of Chapter 4's analysis of impacts to biological resources.
[d] Disturbance may be accounted for in disturbance road acreage of other projects and may be removed at a later date.
[e] The temporary disturbance for gen-tie line and distribution line poles does not include the permanent disturbance or the portion of the spur road that would be coincident with the pole construction area.

SOURCES: McCoy Solar LLC 2012a

2.9 Alternatives Considered but Eliminated from Detailed Analysis

2.9.1 Rationale for Eliminating Alternatives

In accordance with 43 CFR 2804.10, the BLM worked closely with the Applicant during the pre-application phase to identify appropriate areas to site the Project. The BLM discouraged the Applicant from including in its application alternate BLM locations with significant environmental concerns, such as critical habitat, ACECs, DWMAs, designated off-highway vehicle (OHV) areas, wilderness study areas, and designated wilderness areas. The BLM encouraged the Applicant to locate its project on public land with the fewest potential conflicts.

Other alternative sites, technologies and methods identified in Table 2-12 and discussed below were considered by the BLM but eliminated from detailed analysis under NEPA. These alternatives were eliminated from detailed analysis based on one or more of the following reasons:

1. It is ineffective (it would not respond to the BLM's purpose and need)

2. It is technically or economically infeasible

3. It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the land use plan LUP (i.e., the CDCA Plan)

4. Its implementation is remote or speculative

5. It is substantially similar in design to an alternative that is analyzed

6. It would have substantially similar effects to an alternative that is analyzed.

Consistent with the sixth reason to eliminate a potential alternative from detailed analysis, the BLM also considered whether a proposed alternative would avoid or reduce effects to human or environmental resources associated with the Proposed Action, or, conversely, create significant effects potentially greater than those of the Proposed Action. This process for eliminating alternatives from detailed analysis complies with 40 CFR 1502.14(a), BLM IM 2011-059, and NEPA Handbook Section 6.6.3. It is described briefly in the following sections.

2.9.2 Alternatives Considered but Eliminated from Detailed Analysis

Alternative sites, technologies, and methods were considered as alternatives to the MSEP but not carried forward for detailed analysis. Each is discussed below.

2.9.2.1 Site Alternatives

Potential site alternatives to the MSEP were considered but not carried forward for detailed analysis based on one or more of the criteria identified above: one private land alternative, three alternatives on BLM-administered land (Desert Center 1, Mule Mountain, and Black Hill), and potential sites on brownfields/degraded lands identified by the EPA.

2.9.2.1.1 Private Land Alternatives, including the Palo Verde Mesa Solar Project Site

Private lands within Riverside County were considered for development of the proposed solar PV energy facility. An all-private land alternative was not carried forward for detailed evaluation in the Draft PA/EIS because no private parcels or combinations of parcels of sufficient size were available that met the Applicant's minimum project requirements. At the BLM's request, the Applicant hired a California-licensed real estate broker with relevant experience to research the availability of a minimum of 1,500 acres to accommodate up to a 250 MW project. To merit further inquiry, the available acreage would need to be contiguous or nearly so; listed or advertised for sale or lease in the November-December 2011 timeframe, located within 20 miles of the CRS, and in proximity to a reasonable gen-tie line option (BLM, 2011f). Research in accordance with these parameters evaluated more than 195,300 acres of private land within 20 miles of the CRS. Of these, 68 individual private parcels, representing approximately 4,732 acres, were for sale or lease. Of these, the largest contiguous block of land was approximately 858 acres and consisted of 7 parcels and 4 unique land owners (Monaghan, 2011). Because insufficient private land was available to meet the basic needs of the Project, an all-private land alternative was not carried forward for detailed consideration.

Multiple comments on the Draft PA/EIS identified the Renewable Resources Group's approximately 3,400-acre Palo Verde Mesa Solar Project site as a potential alternative to the MSEP. However, as noted by Basin and Range Watch in its comments on the Draft PA/EIS (Comment 6-7), Riverside County currently is considering an application for a 486 MW solar PV facility on that site. This is consistent with the cumulative scenario described in PA/FEIS Section 4.1.5, which identifies this site as one where renewable energy development reasonably is expected to occur. Because the Palo Verde Mesa Solar Project site is under consideration as a separate, independent project, it does not represent an alternative to the MSEP.

2.9.2.1.2 Alternatives on BLM-administered Land

It is important to note that the MSEP project site is consistent with program-level environmental review conducted in the context of the Final Solar PEIS. As noted in PA/FEIS Section 3.10.2.1, the Final Solar PEIS identifies specific locations that, at a plan level, appear well-suited for utility-scale production of solar energy where the BLM would prioritize development (i.e., solar energy zones or SEZs) as well as categories of lands to be excluded from such development. The MSEP project site is located within the area designated as the Riverside East SEZ, signifying that the MSEP site and the surrounding area is preferred for large-scale solar energy development based on its environmental and technical suitability for such development.

Much of the BLM-administered land in the California desert is precluded from development by special designations such as wilderness areas and ACECs, and many potentially suitable areas outside these designated areas are precluded because they are in use or are proposed for other solar energy projects (see Figure 4.1-1, *Cumulative Projects*). Of the remaining BLM-administered land in the California Desert District, three potential sites were evaluated: Desert Center 1, Mule Mountain, and Black Hill.

Desert Center 1

The potential Desert Center 1 site is located adjacent to State Highway 177 north of I-10. The Applicant submitted an SF-299 ROW grant application in 2007 to the BLM to develop a solar energy project on that site. However, that location could be subsumed in expansions of the Joshua Tree National Park and/or the McCoy Wilderness. Accordingly, in the fall of 2008, the BLM rejected the application for ROW grant for a solar energy use there (Tetra Tech EC, Inc., 2011b).

Mule Mountain

The potential Mule Mountain site is located south of I-10, due south of the western half of the MSEP site. The Applicant submitted an SF-299 ROW grant application in 2007 to the BLM to develop a solar energy project on that site. However, California Natural Diversity Data Base (CNDDB) records indicate that the site would support Desert Tortoise, Mojave Fringed-Toed Lizard, Harwood's Milk Vetch, Cave Myotis, and California leaf-nosed bat. Additionally, the site is crossed by two large desert wash systems. Because development of this site would likely result in greater environmental impacts than the Proposed Action and alternatives analyzed, it was eliminated from further consideration. In May 2007, the Applicant relinquished control of the Mule Mountain site to another company (Tetra Tech EC, Inc., 2011b).

Black Hill

The potential Black Hill site is located northeast of the proposed MSEP site, adjacent to the Big Maria Mountains Wilderness. The Applicant submitted (and then withdrew) an SF-299 ROW grant application in 2007 that proposed a solar energy project on that site. Further investigation raised concerns about environmental consequences as well as conflicting uses, road access, and access to transmission. The site is adjacent to wilderness and crossed by three NECO Plan-designated open routes and numerous ephemeral washes. Because development of this site would likely result in greater environmental impacts than the Proposed Action and alternatives analyzed, it was eliminated from further consideration.

2.9.2.1.3 Brownfields / Degraded Lands Alternative

The EPA tracks 480,000 contaminated sites for potential reuse for renewable energy development as part of its RE-Powering America's Lands Initiative. Of these sites, EPA has identified 5,000 sites nationwide as potentially suitable for PV (Paull, 2010)[7]. Using the EPA's Renewable Energy Interactive Mapping Tool, which is a Google Earth KMZ file, it is possible to view information about potential utility scale PV solar energy sites on contaminated lands. In addition to the contaminated site's location, the tool also provides the site name and identification information, a link to the site's cleanup status information, and specific acreage and renewable energy resource information (EPA, 2011)[8]. For example, the tool indicates which potential sites are (and which are not) within a designated Renewable Energy Zone (REZ). REZs have been established by the BLM in coordination with the Western Governors Association, the Department of Energy, and the States of Colorado and California and take into consideration both resource potential and exclusion zones.

Using the tool to select EPA tracked sites (i.e., abandoned mined lands, brownfields, RCRA sites, federal and non-federal Superfund sites, and landfills) as well as state-tracked sites, four locations with excellent utility solar power potential are identified along the I-10 corridor between Riverside and the Arizona border (where I-10 becomes Arizona State Route 95)[9]: The Coachella Valley Disposal Site is a 75-acre EPA-tracked landfill near Coachella, California; it is not included in a REZ (Google, 2010a). Mecca Landfill II is an 80-acre EPA-tracked landfill near Mecca, California; it also is not within an REZ (Google, 2010c). The Blythe Disposal Site is a 78-acre EPA-tracked landfill near Blythe, California; it is within the Western REZ (Google, 2010d). Finally, the Eagle Mountain Landfill is a 160-acre EPA-tracked landfill in the City of Desert Center; it is included within the Western REZ and a BLM Solar Resource Area (Google, 2010b). None of these sites is large enough to meet the Applicant’s minimum project requirements. By comparison, it is estimated that the smallest of the action alternatives (Alternative 2) would permanently disturb approximately 2,175.5 acres.

7 Paull, 2010. Brownfields and Green Jobs [A presentation of Evans Paull, Redevelopment Economics, at the 2010 West Virginia Brownfields Conference: Perspectives of Potential]. Available online: http://www.wvbrownfields.org/conferences/2010/presentations/Evans%20Paul%20-%20Jobs.pdf.

8 EPA, 2011. RE-Powering America's Land, Renewable Energy Interactive Mapping Tool (rev. Nov. 29, 2011). Available online: http://www.epa.gov/oswercpa/mapping_tool.htm.

9 The first contaminated site identified by the tool along SR 95 in Arizona is more than 80 miles from the California border (Google, 2010).

Supplementing EPA's RE-Powering America's Lands Initiative, EPA and the National Renewable Energy Laboratory (NREL) have developed a Google Earth Map and data set that illustrate approximately 11,000 contaminated and degraded public and private sites in California that could be candidates for renewable energy development (EPA, 2012).[10] This tool includes additional California sites and uses a screening tool to filter and suggest sites as the best for utility-scale renewable energy development based on the various renewable energy technologies and associated screening criteria. Current and former Superfund sites, mine sites, and other “brownfield” locations are identified. Of the approximately 11,000 sites, only one potential utility scale PV solar site is identified within nearly 50 miles of the proposed site: Wiley Wells Water Point (CAMA), which is a formerly used defense site (FUDS) located south of I-10 and 12 miles west of Ripley. Siting an alternative at Wells Water Point would not fulfill the BLM’s purpose and need to consider an application for the authorized use of public lands.

There is no clear, well-established definition of what constitutes “previously disturbed lands,” nor are there any clearly defined thresholds for determining when lands cannot be restored to their former, undeveloped state. Information provided with the comments submitted on behalf of CURE (Comment 11-128) identifies seven parcels or groups of parcels of abandoned private farmland in Eastern Riverside County, and suggests that these parcels should be evaluated as alternate sites for the MSEP due to their previously disturbed status. The parcels/parcel groupings are 130 acres, 40 acres, 6,840 acres, 1,100 acres, 240 acres, 330 acres, and 320 acres respectively. None of these parcels or parcel groupings were available for sale or long-term lease and met the minimum requirements for an all-private-land alternative that are discussed in PA/FEIS Section 2.9.2.1.1, Private Land Alternative.

2.9.2.2 Other Types of Energy Projects

Table 2-12 describes alternative types of energy projects that were considered by the BLM but not carried forward for detailed analysis and the agency’s rationale for dismissing from further review.

[10] EPA, Pacific Southwest, Region 9, 2012. Renewable Energy on Contaminated Lands in California. Available online: http://www.epa.gov/region9/climatechange/renewcontlands/index.html (rev. September 13, 2012).

TABLE 2-12
OTHER TYPES OF ENERGY PROJECTS ELIMINATED FROM DETAILED ANALYSIS

Alternative	Purpose and Need Criteria	Feasibility Criteria	Environmental Criteria	Remote/Speculative
Stirling Dish Technology (Uses mirrors distributed over a parabolic dish surface to concentrate sunlight on a receiver fixed at the focal point. Uses a working fluid such as hydrogen that is heated up to temperatures of approximately 1,200° F in the receiver to drive an engine. A dish will generate 5-30 kilowatts of electricity depending on the system. Stirling Energy Systems' 25 kW SunCatcher™ is 38 feet tall and 40 feet wide.)	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands.	Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.	With a minimum size of nearly 4,500 acres for 500 MW, Stirling Dish Technology would increase the footprint of the MSEP and, due to the greater height of this technology, also would increase visual impacts relative to the Proposed Action.	Stirling Dish Technology is the proprietary technology of Stirling Energy Systems, which filed for bankruptcy in September, 2011. As such, it is not currently commercially available. Two utility-scale projects would have used this technology: San Diego Gas & Electric cancelled its Imperial Valley project and SCE has filed a new application for the proposed Calico project using different technology.
Solar Power Tower Technology (A flat mirror "heliostat" system that tracks the sun and focuses solar energy on a central receiver at the top of a high tower. The focused energy is used to heat a transfer fluid (800° F to 1,000° F) to produce steam and run a central power generator).	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.	No substantial reduction in impacts would occur under this technology. The large area needed for a solar power tower plant would exceed the land requirement for the MSEP, and the height of the heliostats could cause greater impacts to the Blythe Airport.	Approved technology. On December 8, 2011, Secretary Salazar approved interconnection facilities for the Rice Solar Energy Project, which will use the "power tower" technology to generate 150 MW on 1,410 acres of previously disturbed private land near Blythe.
Linear Fresnel Technology (Uses long parallel rows of flat mirrors to focus the sun's energy onto elevated receivers, which consist of a system of tubes through which water flows. The concentrated sunlight boils the water, generating high-pressure steam for direct use in power generation and industrial steam applications).	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	This technology is a proprietary technology owned by Ausra, Inc., which is not under the ownership or control of the Applicant. The technology is outside the Applicant's area of expertise.		Ausra operates a 5 MW plant in Bakersfield. There is no indication that the company, which has changed its focus to medium-sized (50 MW) solar steam generating systems, would be available or interested in developing a project with sufficient capacity to take the place of the Proposed Action.
Distributed Solar Technology (Uses small, modular power generators, typically up to 50MW, located at or near customer demand).	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands			To be a viable alternative to the MSEP, there would have to be sufficient newly installed solar panels to generate 500 MW of capacity. The rate of PV manufacturing and installation is expected to continue to grow and larger distributed solar PV installations are becoming more common. California has approximately 40 million square feet (approximately 920 acres) of distributed solar. An additional approximately 150 million square feet

TABLE 2-12 (Continued)
OTHER TYPES OF ENERGY PROJECTS ELIMINATED FROM DETAILED ANALYSIS

Alternative	Purpose/Objectives Criteria	Feasibility Criteria	Environmental Criteria	Remote/Speculative
Distributed Solar Technology (cont.)				(approximately 3,500 acres) would be required to provide 500 MW. In addition to planning and permitting barriers, replacing the action alternatives with a DG solar energy alternative would be speculative based on existing limitations on the integration of DG into the electric grid, expense, and the lack of electricity storage in most systems (NREL, 2010).
Wind Energy (Uses one or more wind turbines to convert the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind).	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	This technology is within the Applicant's area of technical expertise.	Utility-scale wind energy projects could cause significant impacts to biological, visual, cultural, water, and soils resources. Accordingly, these alternatives would not reduce impacts relative to the Proposed Action.	The BLM manages 20.6 million acres of public lands with wind potential. The BLM has authorized 198 ROWs for the use of public lands for wind energy site testing or development. Of these, 29 authorizations have a total installed capacity of 437 MW.
Geothermal Energy	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	This technology is not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		Of the geothermal producing leases managed by the BLM, 59 leases generate about 1,275 MW of installed geothermal energy. The 2008 programmatic EIS relating to BLM's authorization of geothermal leasing estimates a potential for 5,540 megawatts (MW) of new electric generation capacity from 111 new geothermal power plants in 12 western states by 2015, and an additional 6,600 MW from another 133 plants by 2025. In California, 14 parcels have been competitively leased.
Biomass Energy	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not produce an amount of energy necessary to replace the MSEP. Thus, it would be technically infeasible at the scale required to replace the MSEP. Also, this technology is not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.	Biomass facilities generate significant air emissions and require numerous truck deliveries to supply the plant with the waste. Other environmental concerns associated with biomass relate to the emission of toxic chemicals, such as dioxin, and the disposal of the toxic ash that results from biomass burning. Accordingly, these alternatives would not reduce impacts relative to the Proposed Action.	Because most biomass facilities produce between 3 and 10 MW, it would be speculative to assume that it would be possible for a biomass alternative to generate sufficient energy output to take the place of the MSEP.

TABLE 2-12 (Continued)
OTHER TYPES OF ENERGY PROJECTS ELIMINATED FROM DETAILED ANALYSIS

Alternative	Purpose/Objectives Criteria	Feasibility Criteria	Environmental Criteria	Remote/Speculative
Tidal Energy	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	The use of tidal fence technology is limited to areas that are adjacent to a body of water with a large difference between high and low tides (unlike the proposed site). Also, it would not be within the Applicant's area of expertise, and so would not be technically or economically feasible for it to implement.	Tidal energy alternatives could create significant environmental impacts to ocean ecosystems.	Because in-flow tidal turbines are a relatively new technology, unproven at the scale that would be required to replace the MSEP.
Wave Energy	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Would be technically infeasible at the scale required to replace the MSEP Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		Because wave energy technology is new, it is not known whether it would be technologically feasible at the scale required to replace the MSEP.
Natural Gas	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Would be technically infeasible at the scale required to replace the MSEP Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		
Coal	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Would be technically infeasible at the scale required to replace the MSEP Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		
Nuclear Energy	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	The permitting of new nuclear facilities in California is currently illegal, so the implementation of this technology would be legally infeasible. Also, it is not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		

TABLE 2-12 (Continued)
OTHER TYPES OF ENERGY PROJECTS ELIMINATED FROM DETAILED ANALYSIS

Alternative	Purpose/Objectives Criteria	Feasibility Criteria	Environmental Criteria	Remote/Speculative
Conservation and Demand-side Management (Consists of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution).	Would not meet BLM's purpose and need to respond to an application for a solar PV facility on public lands	Would be technically infeasible at the scale required to replace the MSEP Not within the Applicant's area of expertise, and so would not be technically or economically feasible for the Applicant to implement.		With population growth and increasing demand for energy, conservation and demand-management alone is not sufficient to address all of California's energy needs.

SOURCES: BLM, 2011a, 2011b, 2011c; SEIA, 2010; NREL, 2010.

CHAPTER 3
Affected Environment

3.1 Introduction

The Applicant proposes to construct, operate, maintain, and decommission the MSEP, an up-to-750 MW solar PV energy generating facility and related infrastructure in unincorporated Riverside County, California.

If approved, the MSEP would be located primarily on public land managed by the BLM with a small portion located on non-federal lands under Riverside County's jurisdiction at a site approximately 6 miles north of the I-10 freeway, and 13 miles northwest of the City of Blythe, California. See Figure 1. The Proposed Action includes a double-circuit, overhead 230 kV gen-tie line that would interconnect at the CRS about 7 miles southwest of the solar plant site and an access road. The Applicant has applied for a ROW grant from BLM for approximately 7,700 acres. The Applicant also has applied for a CUP and PUP from the County for the portion of the MSEP site on 477 acres of non-federal lands. Within the 7,700 acre ROW area, construction and operation would disturb approximately 3,960 acres for a solar plant site, 146 acres for linear facilities outside the solar plant site, including a 14.5-mile generation-tie (gen-tie) line and access road within a right-of-way width of 100 feet (Eastern Route) and a 2-acre switchyard to be located adjacent to and connect into the CRS. The total disturbance under the Proposed Action would be 4,583 acres.

The Proposed Action would utilize solar PV technology to generate electricity. With this technology, arrays of solar PV modules (or panels) collect radiant energy from the sun and convert it directly into DC electrical energy. The arrays would be organized into 2 MW blocks consisting of up to 15 acres of panels and a PCS that would convert the DC electricity to AC electricity for transmission.

Chapter 3 describes the resources, resource uses, special designations, and other important topics (including public health and safety, social and economic considerations, and environmental justice conditions) that may be impacted by the Proposed Action. "Resources" include air, soil, water, vegetative communities, wildlife, wildland fire ecology and management, as well as cultural, paleontological, and visual resources. "Resource uses" include livestock grazing management, land use planning and realty, minerals, recreation management, public services, transportation and public access, and utilities and service systems. "Special designations" include areas of critical environmental concern (ACECs), wilderness areas, wilderness study areas, and lands with wilderness characteristics.

Information and data used to prepare this chapter were obtained from the CDCA Plan of 1980, as amended, various BLM planning and NEPA documents, and applicable regulations and plans. Information and data also were collected from many other related planning documents and research publications prepared by various federal, state, and local agencies as well as from private sources pertaining to key resource conditions and resource uses found within the Project area. The purpose of this chapter is to provide a description of affected resources and resource uses within the existing environment of the Project area, which will be used as a baseline to evaluate and assess the direct, indirect, and cumulative impacts of the Proposed Action and alternatives described in Chapter 2. Descriptions and analyses of the impacts themselves are presented in Chapter 4, *Environmental Consequences*.

3.2 Air Resources

This section describes the existing meteorological conditions, air quality, sensitive receptors, and overall baseline conditions associated with the Project area. Regulations, plans, and policies including federal, state, and local laws related to air quality that may be relevant to the Proposed Action also are discussed.

3.2.1 Environmental Setting

3.2.1.1 Meteorological Conditions

The Project site is within the Mojave Desert Air Basin (MDAB) at elevations that range between approximately 500 feet and 1,000 feet amsl. Relatively high daytime temperatures, large variations in relative humidity, large and rapid diurnal temperature changes, occasional high winds, and sand, dust, and thunderstorms characterize the climate. The aridity of the region is influenced by a sub-tropical high-pressure system typically off the coast of California and topographical barriers that effectively block the flow of moisture to the region. The Colorado Desert experiences two rainy seasons per year. The first occurs during the winter and the second is the summer monsoon.

The monthly average high temperature in Blythe is 108 degrees Fahrenheit (°F) in July and the lowest average monthly temperature is 37°F in January. Total rainfall in Blythe averages just less than 4 inches per year with about 50 percent of the total rainfall occurring from December through March, and about 25 percent occurring during the August/September summer monsoon season (Western Regional Climate Center [WRCC], 2011).

Prevailing winds in the MDAB are out of the west and southwest (MDAQMD, 2011a). This is due to the proximity of the MDAB to coastal and central regions of the state and the blocking nature of the Sierra Nevada Mountains to the north. The mountain passes are the main channels for the air masses (MDAQMD, 2011a). Mixing heights in the area, which represent the altitudes where different air masses mix together, are estimated to be on average 230 feet (70 meters) in the morning to as high as 5,250 feet (1,600 meters) above ground level in the afternoon.

3.2.1.2 Existing Air Quality

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The federal AAQS, established by USEPA, are typically higher (less protective) than the state AAQS, which are established by the California ARB. The federal and state air quality standards are listed in Table 3.2-1. The times over which the various air quality standards are measured range from 1 hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m^3 or $\mu g/m^3$, respectively).

TABLE 3.2-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm (147 µg/m^3)	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)
	1 Hour	0.100 ppm[a] (188 µg/m^3)	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)	Annual	—	—
	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1,300 µg/m^3)	—
	1 Hour	0.075 ppm[b] (196 µg/m^3)	0.25 ppm (655 µg/m^3)
Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	15.0 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	—
	Rolling 3-Month Average	0.15 µg/m^3 [c]	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

NOTES:
[a] The USEPA is in the process of implementing this new standard, which became effective April 12, 2010. This standard is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations.
[b] On June 2, 2010, the USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The USEPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010.
[c] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

SOURCE: ARB, 2010.

Currently the ambient air quality within the MDAB is classified in the non-attainment category for state ozone and fugitive dust particulate matter (PM10) criteria, but classified in the attainment category for federal air quality. According to the NECO Plan, the ozone standard is exceeded due to long-distance transport of pollutants from the Los Angeles Basin, while the PM10 standard is due to natural sources found in a desert environment and various land uses. These uses include off-highway vehicle use, mining, and livestock grazing.

In general, an area is designated as attainment if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that contaminant standard is violated. In circumstances where there is not enough ambient data available to support designation as either attainment or non-attainment, the area can be designated as unclassified. An unclassified area is normally treated by the USEPA the same as an attainment area for regulatory purposes. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant.

The MDAB is under the jurisdiction of the MDAQMD. The Riverside County portion of the MDAB is designated as non-attainment for the state ozone and PM10 standards. This area is designated as attainment or unclassified for all federal criteria pollutant AAQS and the state carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and fine particulate matter (PM2.5) standards. Table 3.2-2 summarizes the site area's attainment status for various applicable state and federal standards.

TABLE 3.2-2
FEDERAL AND STATE ATTAINMENT STATUS
MDAB WITHIN RIVERSIDE COUNTY

Pollutant	Attainment Status[a]	
	Federal	State
Ozone	Attainment[b]	Moderate Non-attainment
CO	Attainment	Attainment
NO_2	Unclassified/Attainment[c]	Attainment
SO_2	Attainment	Attainment
PM10	Attainment[b]	Non-attainment
PM2.5	Attainment	Attainment

NOTES:
[a] Attainment = Attainment or Unclassified, where Unclassified is treated the same as Attainment for regulatory purposes.
[b] Attainment status for the MDAB within Riverside County only, not the entire MDAB.
[c] Nitrogen dioxide attainment status for the new federal 1-hour NO_2 standard was determined on January 20, 2012.

SOURCE: ARB, 2011a; MDAQMD, 2011a; and USEPA, 2012.

Ambient air quality monitoring data from the most representative MDAB monitoring stations for ozone, PM10, PM2.5, CO, NO_2, and SO_2, for the years 2005 through 2010, are shown in Table 3.2-3 and compared to most restrictive applicable standards. Ozone data are from the Blythe – 445 West Murphy Street monitoring station, PM10 data are from the Lucerne Valley – Middle School monitoring station, and PM2.5, CO, NO_2, and SO_2 data are from the Victorville – 14306 Park Avenue monitoring station.

TABLE 3.2-3
CRITERIA POLLUTANT SUMMARY MAXIMUM AMBIENT CONCENTRATIONS (PPM OR μG/M^3)

Pollutant	Averaging Period	Units	2005	2006	2007	2008	2009	2010	Limiting AAQS[a]
Ozone[b]	1 hour	ppm	0.074	0.078	0.092	0.074	0.072	0.072	0.09
Ozone[b]	8 hours	ppm	0.072	0.059	0.076	0.071	0.066	0.067	0.07
PM10[c]	24 hours	μg/m^3	57	50	212	62	81	38	50
PM10[c]	Annual	μg/m^3	16.9	23.0	27.8	20.7	15.4	13.4	20
PM2.5[c]	24 hours	μg/m^3	27.0	22.0	28.0	17.0	20.0	18.0	35
PM2.5[c]	Annual	μg/m^3	9.6	10.3	9.7	---	9.3	7.6	12
CO[d]	8 hours	ppm	1.6	1.6	1.6	1.0	1.1	5.2	9.0
NO_2[d]	1 hour	ppm	0.08	0.08	0.07	0.07	0.06	0.13	0.18
NO_2[d]	Annual	ppm	0.02	0.02	0.02	0.01	0.02	0.02	0.030
SO_2[d]	24 hours	ppm	0.00	0.01	0.01	0.00	0.01	0.01	0.04
SO_2	Annual	ppm	0.00	0.00	0.00	0.00	0.00	0.00	0.03

NOTES:
[a] The limiting AAQS is the most stringent of the California or National AAQS for that pollutant and averaging period.
[b] Ozone data are from the Blythe - 445 West Murphy Street monitoring station.
[c] PM10 and PM2.5 data are from the Lucerne Valley and Victorville monitoring stations, respectively. Exceptional PM concentration events, such as those caused by wind storms or fires are not shown where excluded by USEPA; however, some exceptional events may still be included in the data presented.
[d] CO, NO_2, and SO_2 are from the Victorville monitoring station.

SOURCE: ARB, 2011b

3.2.1.3 Criteria Air Pollutants

Ozone (O_3)

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted nitrogen oxides (NO_x) and hydrocarbons (volatile organic compounds or VOCs) in the presence of sunlight. Pollutant transport from the South Coast Air Basin (Los Angeles Area) is one source of the pollution experienced in the eastern Riverside County portion of the MDAB.

The 1- and 8-hour ozone concentrations measured at the eastern border of Riverside County have been very slowly decreasing over time. The raw collected air quality data indicate that the ozone violations occurred primarily during the sunny and hot periods typical during May through September.

Nitrogen Dioxide (NO_2)

The entire MDAB is classified as attainment for the state 1-hour and annual and federal annual NO_2 standards. The NO_2 attainment standard could change due to the new federal 1-hour standard, although a review of the air basin-wide monitoring data suggest this would not occur for the MDAB.

Approximately 90 percent of the NO_x emitted from combustion sources is nitric oxide (NO), while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO_2 typically occur during the fall. The winter atmospheric conditions can trap emissions near the ground level, but lacking substantial photochemical activity (sun light), NO_2 levels are relatively low. In the summer the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO_2. The NO_2 concentrations in the Project area are well below the state and federal AAQS.

Carbon Monoxide (CO)

MDAB is classified as attainment for the state and federal 1- and 8-hour CO standards. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend 1 or 2 hours after sunrise. The Project area has a lack of significant mobile source emissions and has CO concentrations that are well below the state and federal AAQS.

Particulate Matter (PM10) and Fine Particulate Matter (PM2.5)

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere.

MDAB is classified as non-attainment for state PM10 standards and unclassified for the federal PM10 standard. Table 3.2-3 shows recent PM10 and PM2.5 concentrations, and shows clear exceedances of the state 24-hour PM10 standard. It should be noted that exceedance does not necessarily mean violation or non-attainment, as exceptional events do occur and some of those events, which do not count as violations, may be included in the data, such as the 2007 data for PM10. The MDAB is designated as non-attainment for the state PM10 standard.

Fine particulate matter, or PM2.5, is derived mainly either from the combustion of materials, or from precursor gases (SO_x, NO_x, and VOC) through complex reactions in the atmosphere. PM2.5 consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The entire MDAB is classified as attainment for the federal standard and, in the Project area, is designated unclassified for the state PM2.5 standards. As indicated in Table 3.2-3, PM2.5 concentrations did not exceed applicable standards during the 6-year study period. This divergence in the PM10 and PM2.5 concentration levels and attainment status indicates that a substantial fraction of the ambient particulate matter levels are most likely due to localized fugitive dust sources, such as vehicle travel on unpaved roads, agricultural operations, or wind-blown dust.[1]

[1] Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles, so the PM2.5 fraction of fugitive dust is much smaller than the PM10 fraction. Therefore, when PM10 ambient concentrations are significantly higher than PM2.5 ambient concentrations this tends to indicate that a large proportion of the PM10 are from fugitive dust emission sources, rather than from combustion particulate or secondary particulate emission sources.

Sulfur Dioxide (SO_2)

The entire MDAB is classified as attainment for the state and federal SO_2 standards.

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Sources of SO_2 emissions within the MDAB come from a wide variety of fuels: gaseous, liquid and solid; however, the total SO_2 emissions within the eastern MDAB are limited due to the limited number of major stationary sources and California's and USEPA's substantial reduction in motor vehicle fuel sulfur content. The Project area's SO_2 concentrations are well below the state and federal AAQS.

3.2.1.4 Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines (ARB, 2012).

3.2.1.5 Sensitive Receptors

For the purposes of this air quality analysis, sensitive receptors are defined as facilities and land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals, and daycare centers. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, and/or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to ambient air quality.

There are no sensitive receptors in the immediate vicinity of the Project site. The nearest sensitive receptor is a residence off Black Creek Road approximately 2.7 miles south of the Project site boundary and a residence near 7th Avenue that is approximately 2.6 miles to the southeast of the Project site boundary. In addition, there are several residences that would be within 1 mile of the proposed gen-tie line, the closest of which is south of I-10 at a distance of approximately 0.6 mile.

3.2.2 Applicable Regulations, Plans, and Standards

3.2.2.1 Federal

The USEPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal AAQS and judging the adequacy of State

Implementation Plans (SIPs). The USEPA has delegated its authority to implement many of the federal programs to California while retaining an oversight role to ensure that the programs continue to be implemented.

MDAQMD is responsible for issuing federal New Source Review (NSR) permits and has been delegated enforcement of the New Source Performance Standards (NSPS). The federal NSR program requires air quality construction and operating permits (i.e., NSR air quality permits) for stationary sources when they exceed specific emissions thresholds for non-attainment pollutants, and require Prevention of Significant Deterioration (PSD) air quality permits when specific emissions thresholds are exceeded for attainment pollutants. The NSPS are emission control/performance standards for specific types of stationary sources, such as boilers, cement kilns, gas turbines, etc. However, the Project does not include stationary sources of air pollution that would have emissions high enough to trigger federal air quality (NSR) permitting, or that would be subject to any of the NSPS (40 CFR Part 52; 40 CFR Part 60).

The Project site is located in a federal attainment/unclassified area; therefore, the Project would not be subject to the general conformity regulations (40 CFR Part 93). The USEPA has set emission standards for non-road diesel engines, including those used on construction cranes. These standards are published in 40 CFR Part 89.

3.2.2.2 State

As discussed above in Section 3.2.1.2, ARB has established state AAQS for many of the same pollutants covered by the federal AAQS that are as stringent, or more stringent, than the federal AAQS. Pollutants regulated under these standards include ozone, NO_2, CO, PM10, PM2.5, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Additional information regarding the state AAQS that are relevant to the Project is provided Section 3.2.1.2.

ARB also has on-road and off-road engine emission reduction programs that would indirectly affect the Project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, ARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.

In 1990, the State of California administratively listed under Proposition 65 the particulates formed in the exhaust of diesel-powered equipment and vehicles as a chemical known to the state to cause cancer. California has also enacted a regulation for the reduction of TACs in the form of diesel particulate matter (DPM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles (13 CCR §2449). This regulation provides target emission rates for PM and NO_x emissions from owners of fleets of diesel-fueled off-road vehicles and applies to equipment fleets of three specific sizes and the target emission rates are reduced over time (ARB, 2011c).

3.2.2.3 Local

Mojave Desert Air Quality Management District

The Project site is within the jurisdiction of the MDAQMD. The MDAQMD regulates air pollutant emissions for all sources in the MDAB other than motor vehicles. The MDAQMD enforces regulations and administers permits governing stationary sources. The only stationary sources that would be associated with the MSEP would be two 35-horsepower (hp) standby emergency generators; however, those sources would be exempt from MDAQMD permit requirements because they would be less than 50 hp (MDAQMD, 2010). The following rules would apply to the Project:

Rule 402 – Nuisance

This rule prohibits discharge from any source whatsoever in such quantities of air contaminants or other material that cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property (MDAQMD, 2011b).

Rule 403 – Fugitive Dust

This rule limits the emissions of fugitive dust or particulate matter from a variety of activities and sources such as grading, construction, and storage sites. It includes a visible emissions property line standard, a sampling standard of 100 $\mu g/m^3$, and precautionary requirements to prevent track-out on to paved public roads (MDAQMD, 2011b).

Triennial Revision to the 1991 Air Quality Attainment Plan

As required by the federal and California CAAs, air basins or portions thereof have been classified as in either “attainment” or “non-attainment” of each criteria air pollutant, based on whether or not the standards have been achieved. Jurisdictions of non-attainment areas are also required to prepare an air quality attainment plan that includes strategies for achieving attainment. The MDAQMD’s attainment plan applicable to the Project area was adopted on January 22, 1996. The purpose of the Triennial Revision to the 1991 Air Quality Attainment Plan was to set forth a program to lead the entire MDAB into compliance with state 1-hour ozone air quality standard (MDAQMD, 2011a).

3.3 Biological Resources – Vegetation

This section describes the environmental setting; vegetation communities; invasive, weeds; special-status plant species; and state and federal jurisdictional areas that are present within the proposed Project site. It also lists the special-status plant species that have potential to occur but that were not observed during focused botanical surveys.

This discussion is based, in part, upon information from these sources:

1. Focused botanical surveys performed in spring and fall 2011 (Tetra Tech EC and Karl, 2011a; 2011b);
2. The *Biological Resources Technical Report* for the Project prepared by the Applicant (Tetra Tech EC and Karl, 2011a) (see Appendix C);
3. The *Fall 2011 Plants and Supplemental Wildlife Survey Report* prepared by the Applicant (Tetra Tech EC and Karl, 2011b) (see Appendix C);
4. A supplemental biological report entitled *Response to Data Request* (Tetra Tech EC, 2012a);
5. The California Natural Diversity Database (CNDDB) (2011);
6. The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS, 2011); and
7. Calflora (2011); and
8. Findings and supporting technical studies for the California Energy Commission (CEC) Staff Assessment and Draft Environmental Impact Statement for the Blythe Solar Power Project (BSPP), March 2010.

The study area for vegetation resources includes public lands administered by the BLM and private land under the land use jurisdiction of Riverside County. The 13,897-acre study area where vegetation communities were characterized and special-status plant surveys were performed included the immediate footprint for the solar plant site and a minimum 240-foot-wide survey corridor for linear facilities (Tetra Tech EC, 2012a).

3.3.1 Environmental Setting

The Sonoran Desert region of southeastern California, a region bounded by the Mojave Desert to the north and by the higher elevations of the Peninsular Ranges to the west, has a unique desert climate influenced by the addition of monsoonal summer rains; a contrast to the dry summer Mediterranean climate that characterizes much of California. The southeastern corner of California has a bimodal rainfall pattern, with a rainy season in both summer and winter (December through March and July through September).

The unique position of the region at the junction with the Neotropic ecozone to the south contributes to the presence of a number of rare and endemic plants and vegetation communities specially adapted to this bimodal rainfall pattern, and not found further north in the Mojave Desert. These include ironwood (*Olneya tesota*) and blue palo verde (*Cercidium floridum*), and a number of summer annuals that only germinate after a significant warm summer rain.

This distinctive bimodal climate of the Sonoran Desert distinguishes it, floristically, from other deserts, including the Mojave Desert, and from the rest of California, which is characterized by warm dry summers and a single rainy season in winter. In addition to being hotter and drier, the Sonoran Desert region also rarely experiences frost. Although the region supports numerous perennial species, including a wide variety of cacti, more than half of the region's plant species are herbaceous annuals, which reveal themselves only during years of suitable precipitation and temperature conditions.

This region also occupies an important biogeographic location and zone of ecological transition on the Pacific coast of North America, and so its floristic diversity includes many widespread taxa on the edge of their range. Many such species are more common outside of California but here they represent geographically marginal, peripheral populations on the frontiers of their range. The evolutionary significance, and therefore the conservation value, of peripheral populations are well documented, as is their greater risk of extirpation (Leppig & White, 2006).

3.3.1.1 Vegetation Communities

Four natural vegetation communities were identified within the study area (Figure 3.3-1). On the proposed solar plant site, located 5.5 miles north of I-10 on the Palo Verde Mesa, vegetation communities include Sonoran creosote bush scrub, desert dry wash woodland, and vegetated ephemeral swales (supporting a desert wash scrub of creosote bush and big galleta grass). Within the Sonoran creosote bush scrub community lie broad expanses of desert pavement, a distinctive but largely unvegetated habitat. The gen-tie line crosses I-10 and terminates at the southeast end of Chuckwalla Valley at the Colorado River Substation. This area includes stabilized and partially stabilized desert dunes associated with the Chuckwalla-Palen dune system. No dunes or sand fields occur on the proposed solar plant site. The two other non-natural cover types in the study area in the eastern portion are agriculture and developed.

Several desert washes of varying hydrologic capacity and size drain out of the McCoy Mountains from the west to east in the Project site. The majority of these washes support woody, riparian vegetation while drier, flashy washes located in the center of the site support a desert wash scrub of creosote bush and big galleta grass, with only widely scattered riparian trees such as blue palo verde and ironwood. Active and fallow agriculture and developed areas also occur within the gen-tie line corridor in addition to the communities already mentioned. Two of the four communities, desert dry wash woodland and creosote bush-big galleta, are considered sensitive as indicated by the CNDDB. These communities are discussed in more detail below. Vegetation communities were characterized by the classification system used by Holland (1986) and the NECO Plan (Evens and Hartman, 2007), and cross-referenced with *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995), where appropriate. Table 3.3-1 summarizes the acreage of natural communities that occurs within the Project Area.

TABLE 3.3-1
NATURAL COMMUNITIES AND COVER TYPES IN THE PROJECT AREA

Vegetation Communities/Cover Type	Area within Project Area[a]				
	Unit 1	Unit 2	Gen-tie Line and Access Road	Distribution Line	Total
Ephemeral "Riparian" Drainages					
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0	1.5	1.8	0.9	4.2
Mesquite Bosque	0	0	0.5	0	0.5
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	2.8	38.1	0	0	40.9
Vegetated Ephemeral Channels (Vegetated with No Trees)	47.3	50.4	0.8	0	98.5
Unvegetated (approximately less than or equal to 5% cover)	10.2	15.1	0.5	0	25.8
Subtotal Ephemeral "Riparian" Drainages	***60.3***	***105.1***	***3.6***	***0.9***	***169.9***
Upland					
Sonoran Creosote Bush Scrub (Creosote Bush-White Burr Sage Scrub Alliance)	2,198.7	2,072.9	96.4	4.1	4,372.1
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	0	0	38	0	38
Subtotal Upland	***2,198.7***	***2,072.9***	***134.4***	***4.1***	***4,410.1***
Other Cover Types					
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0	2.3	2.3
Developed (No Vegetation)	0	0	21.4	0	21.4
Subtotal Other Cover Types	***0***	***0***	***21.4***	***2.3***	***23.7***
Total Acres	**2,259**	**2,178**	**159.4**[2]	**7.3**	**4,603.7**[b]

NOTES:
a The Project Area is the footprint of all Project components, which includes the Solar Plant Site and linear features
b Includes 21.4 acres of developed lands

SOURCE: Tetra Tech EC, 2012a, 2012b

Upland

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote scrub species of the Colorado Desert (Figure 3.3-1) (Holland, 1986). This community dominates the study area and is typically characterized by large expanses of desert pavement. Typical upland vegetation in this community is largely confined to drainages, likely because most of the available water is in the drainages due to the low regional rainfall and qualities of both substrate and soil. The indicator plant species within this community are creosote bush

(*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), ocotillo (*Fouquieria splendens*), and cheesebush (*Ambrosia* [=*Hymenoclea*] *salsola*) (Tetra Tech EC and Karl, 2011a; Tetra Tech EC, 2012a; Solar Millennium, 2009a as cited in CEC, 2010b).

Stabilized and Partially Stabilized Desert Dunes

These dune systems are described as accumulations in the desert which are stabilized or partially stabilized by evergreen and/or deciduous shrubs and scattered, low grasses. Sand Dune communities were recognized as sensitive in the NECO Plan (Figure 3.3-2). These dunes typically occur lower than active dune systems and retain water just below the sand surface which allows deep-rooted, perennial vegetation to survive during longer drought periods. The dominant plant species associated with this community include creosote bush, white bursage, galleta grass (*Pleuraphis rigida*), four-wing saltbush (*Atriplex canescens*), desert croton (*Croton californicus*), and Colorado Desert buckwheat (*Eriogonum deserticola*) (Tetra Tech EC, 2012a; Holland, 1986). Several sand-associates and other annuals are also abundant such as sand verbena (*Abronia villosa*), birdcage primrose (*Oenothera deltoides*), desert marigold (*Baileya pauciradiata*), and narrow-leaved forget-me-not (*Cryptantha angustifolia*). Sahara mustard (*Brassica tournefortii*) and, often, Russian thistle (*Salsola tragus*) are also dense throughout the dunes (Tetra Tech EC, 2012a).

The 230 kV switchyard and the western section of the gen-tie line route are exclusively within this habitat type. The dunes within the study area are an important habitat for the Mojave fringe-toed lizard, Harwood’s phlox, western burrowing owl, American badger, and desert kit fox, as well as a variety of common plant and wildlife species.

Ephemeral “Riparian” Drainages

Virtually all surface hydrology within the study area is from stormwater runoff originating in unnamed ephemeral washes west of the Project site from the McCoy Mountains and flowing eastward to the Palo Verde Mesa. These washes are a component of a large alluvial fan that generally comprises the Palo Verde Mesa (Galati & Blek, 2009a as cited in CEC, 2010b). The closest major watercourse to the study area is the McCoy Wash, a large ephemeral wash that drains to the Colorado River. The McCoy Wash is located east of the Project site and the ephemeral washes that flow eastward from the McCoy Mountains abate into the landscape prior to any surface hydrological connection with the McCoy Wash.

The ephemeral drainages within the study area are generally microfloodplains with compound channels, is a common arid stream system (USACE, 2008). With any connecting ephemeral stream system in arid regions, the riparian corridor can be populated and lined with xeric riparian vegetation and unvegetated areas such as recently created swales and terraces (interfluves), or a mosaic of these types (Bendix and Hupp, 2000 as cited in CEC, 2010b). While the bed and bank topography in arid region stream systems are subtle, evidence of channelized flow fundamentally defines the presence of a stream. Swales are depressions or hollows, oftentimes vegetated but not necessarily so, where runoff from the surrounding uplands accumulates. Three communities that occupy ephemeral drainages have been identified in the study area. These are Desert Dry Wash Woodland, Vegetated Swales supporting Creosote Bush-Big Galleta Grass Association, and Unvegetated Ephemeral Dry Washes.

Desert Dry Wash Woodland

Desert dry wash woodland is recognized as a sensitive vegetation community by the BLM (NECO Plan), CNDDB, and is also designated as state waters by the CDFG (Figure 3.3-3). This vegetation community corresponds to CDFG's Blue Palo Verde-Ironwood-Smoke Tree Woodland habitat type (Holland, 1986). This community is described by Holland as an open to densely covered, drought-deciduous, microphyll riparian scrub woodland. These habitat types often support braided wash channels that change patterns and flow directions following every surface flow event (Holland, 1986). Typical indicator plant species of this community include but are not limited to blue palo verde (*Parkinsonia* [=*Cercidium*] *florida*), cheesebush, smoke tree (*Psorothamnus spinosus*), sweetbush (*Bebbia juncea* var. *aspera*), tamarisk (*Tamarisk* spp.), and catclaw acacia (*Senegalia* [=*Acacia*] *greggii*).

This community is dominated by an open tree layer of blue palo verde and ironwood. Common understory species include smoke tree, big galleta grass, desert starvine (*Brandegea bigelovii*), creosote bush, desert lavender (*Hyptis emoryi*), catclaw acacia (*Senegalia gregii*), among other species (TetraTech EC and Karl, 2011a). Desert dry wash woodland habitat locally shows various signs of coyote (*Canis latrans*), fox (either kit fox [*Vulpes macrotus*] or gray fox [*Urocyon cinereoargenteus*]), and bobcat (*Lynx rufus*) use, and provides value to various species of wildlife in the form as food, cover, dispersal, and refuge habitat (AECOM, 2010a as cited in CEC, 2010b).

Vegetated Swales Supporting Creosote Bush-Big Galleta Grass Association

The Creosote Bush-Big Galleta Grass Association is not defined by Holland but is a subcomponent of Sonoran creosote bush scrub, part of the big galleta alliance as defined by CDFG, and is recognized as a sensitive community by the CNDDB. It was mapped and documented under the recent detailed mapping of the Mojave Desert region (Thomas et al., 2004; Sawyer, Keeler-Wolf & Evans, 2009) and is defined by CDFG as a rare natural community, with a CNDDB State (NatureServe) Rank of G3 S2.2 (CDFG considers natural communities with a State Rank 3 or less to be rare). Communities with a State Rank of 3 have fewer than 100 documented occurrences or are represented by fewer than 50,000 acres statewide. Within the study area, the creosote bush-big galleta grass community occurs as an understory component in the washes within the desert dry wash woodland and continues along the drier reaches of ephemeral desert washes where sandy fluvium collects. Dominant and indicator plants of this community include creosote bush, big galleta grass, and cheesebush, another characteristic perennial of ephemeral desert washes. Occasional associates found within this community include brownplume wirelettuce (*Stephanomeria pauciflora* var. *pauciflora*), Utah cynanchum (*Cynanchum utahense*), Hartweg's twinevine (*Sarcostemma cynanchoides* ssp. *hartwegii*), and trailing townula (*Sarcostemma hirtellum*) (AECOM, 2010a as cited in CEC, 2010b). This desert wash community often occurs as the only vegetated habitat in broad expanses of desert pavement, which increases its value to wildlife.

Unvegetated Ephemeral Dry Washes

Unvegetated dry washes provide movement corridors for small and large mammals and provide a seasonal water source not available in the surrounding dry uplands. Even the smaller washes have been shown to support a higher density of spring and summer annuals than the surrounding uplands and thus provide important habitat value.

Unvegetated ephemeral dry washes are defined by shelving and/or scour resulting in an established bed, bank, and channel. In areas where evidence of distinct shelving and/or scour were absent, but some indication of past surface water flow could be observed, it was ascertained that these features were either swales (that support low volume and duration surface flow and/or were low lying undefined relatively linear features in the landscape that are unvegetated or primarily populated exclusively by Sonoran creosote bush scrub) or eroded relictual washes that support sheet flow during rain events.

The ephemeral washes in the Project Disturbance Area are generally linear features collectively composed of multiple, sinuous subchannels of varying sizes, resulting in anastomosed morphology. By virtue of the anastomosed morphology occurring within the washes, there are interfluves that have been formed by these multiple subchannels. Within the unvegetated ephemeral dry wash, there are interfluves of Sonoran creosote bush scrub habitat between the channels of the dry washes. These interfluves are upland features, encompassed by unvegetated ephemeral dry wash, and are not considered jurisdictional waters of the United States.

Functions and Values of Ephemeral Drainages

The ephemeral washes within the study area provide significant hydrologic, biogeochemical, plant, and wildlife functions.

Hydrologic Function. The established washes and ancillary drainage features are the primary fluvial systems within the study area, and these provide a significant potential for aquifer recharge during storm events. The vegetated swales are the secondary fluvial system and do not present a significant potential for aquifer recharge. However, the vegetated swales present high functions and values for surface water quality (USACE, 1979). The ephemeral washes are not sufficiently developed to abate flooding in severe storms. However, the unvegetated portions of the ephemeral washes and swale features and networks can intercept runoff and slow down the velocity of surface water and potentially remove or transform pollutants through physical, chemical, and biological processes improving water quality.

Biogeochemical Function. The xeric riparian areas potentially provide a sink for nutrients, organic compounds, metals, and components of organic matter. The desert dry wash woodland may also act as filters of sediments and organic matter. The xeric riparian areas may be a permanent sink for these substances. The inputs of detritus within the wash present basic energy inputs at an ecosystem level for biochemical processes, nutrient cycling, and elemental import/export processes, which for desert dry wash woodland are also functioning at a relatively high value level in comparison with the surrounding upland areas. Lacking established wash obligate vegetation for additional organic and inorganic inputs and uptake, the unvegetated ephemeral dry washes are likely functioning at a relatively moderate to low level. The vegetated swale features and networks supporting low-volume and short-duration flow presents a moderate to low function and value for biogeochemical function and a high function and value for the retention of particulates during storm events (USACE, 1979).

Plant Habitat Function. The ephemeral washes and vegetated swale networks provide habitat for establishment of more developed plant diversity and developed spatial structure because of access to water relative to upland areas. The diversity of plants also provides habitat to special-status species, discussed below. Typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote bush scrub where a diversity of perennial plants is relatively high and production of ephemeral forage plants is also high (USFWS, 2011). Desert dry wash woodland and vegetated swales offer high functions and values such as forage production and shelter, while unvegetated ephemeral dry washes comparatively offer moderate to low functions and values relative to forage production and shelter.

Animal Habitat Function. The xeric riparian areas and unvegetated ephemeral dry washes are integral to the ecological function of the watershed. The ephemeral washes, both vegetated and unvegetated, and vegetated swale networks provide unique wildlife habitat with a diversity of vegetation and topography. Ephemeral washes provide cover, foraging habitat, opportunities for burrowing and nesting, and corridors for wildlife movement.

Other Cover Types

Agriculture

In fallow agricultural areas, ruderal vegetation is recolonizing previously farmed areas including Russian thistle, Sahara mustard, and other exotic plant species interspersed with native vegetation from past agricultural disturbance and activities (Tetra Tech EC and Karl, 2011a). Fallow and active agriculture fields provide habitat value to local and migratory wildlife in the form of food, cover, and shelter habitat, especially if fields are actively irrigated.

Developed

Developed areas consist of paved and unpaved areas associated with I-10, dirt access roads and cleared land within the study area. Paved roadways are often used by mammals and cold-blooded species as movement corridors and/or as heat sources during cooler months or periods of the day in order to increase body temperatures.

3.3.1.2 Invasive and Noxious Weeds

Noxious weeds are species of non-native plants included on the weed lists of the California Department of Food and Agriculture (CDFA) (2010), the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the BLM. They are of particular concern in wildlands because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC, 2006). Specifically, noxious and invasive weeds can alter habitat structure, increase fire frequency and intensity, decrease forage (including for special-status species, such as desert tortoise), exclude native plants, and decrease water availability for both plants and wildlife. Soil disturbance and gathering and channeling water create conditions favorable to the introduction of new noxious and invasive weeds or the spread of existing populations. Construction equipment, fill, and mulch can act as vectors introducing noxious and invasive weeds into an area.

Non-native plant species were recorded as a part of surveys conducted in support of the proposed action (Tetra Tech EC and Karl, 2011a; AECOM, 2010). Sixteen non-native species were observed within the study area: Sahara mustard, Russian thistle, salt cedar, Mediterranean grass (*Schimus* spp.), red brome (*Bromus madritensis* ssp. *rubens*), London rocket (*Sisymbrium irio*), puncture vine (*Tribulus terrestris*), blue panicgrass (*Panicum antidotale*), cheeseweed (*Malva parviflora*), pigweed (*Amaranthus* spp.), and goosefoot (*Chenopodium* spp.). Of these, five are noxious weeds and are identified on a list of the region's worst weeds compiled by the Low Desert Management Area (NRCS, 2005 as cited in CEC, 2010b). Noxious weeds found in the study area are discussed further below.

Sahara mustard (*Brassica tournefortii*) was found in disturbed areas throughout the study area (Tetra Tech EC and Karl, 2011a; AECOM, 2010a as cited in CEC, 2010b). This species is of high concern; it is a BLM weed of special concern and Cal-IPC has declared this plant highly invasive (Cal-IPC, 2006) and recommends that it should be eradicated whenever encountered. This species is associated with impacts to habitat for native wildlife as well as for native plants. It promotes the spread of fire by increasing fuel load and competes with native plants for moisture and nutrients. In addition, it increases cover and works to stabilize sand, thereby affecting wildlife species dependent on open sandy habitat (Brossard et al., 2000; Barrows and Allen, 2007).

Russian thistle (*Salsola tragus*) was found in disturbed areas throughout the study area (Tetra Tech EC and Karl, 2011a; AECOM, 2010a as cited in CEC, 2010b). Although all invasive plants share the trait of being adapted to disturbed habitat, Russian thistle or tumbleweed particularly tends to be restricted to roadway shoulders and other sites where the soil has been recently disturbed. However, once an area is disturbed, this species competes readily and can affect native plant ecosystems and increase fire hazard (Orloff et al., 2008; Sanders, 1998). Dune habitat is particularly vulnerable to non-native species, which can stabilize sand or block sand movement, and Russian thistle is considered an invasive species of primary concern in this habitat (CDFG, 2007). There is a high potential that Russian thistle could become established in the construction area and this species should be eradicated if observed. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC, 2006) and the CDFA has given it a "C" rating. A C rating means that the pest is of known economic or environmental detriment and, if present in California, it is usually widespread. If found in the state, it is subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner. There is no state-enforced action other than providing for pest cleanliness.

Mediterranean tamarisk or salt cedar (*Tamarix ramosissima*) is a riparian plant and is therefore restricted to habitats where there is perennial saturation such as springs and seeps, or runoff from poorly maintained water pipelines or well pumps. Botanical surveys detected 20 Mediterranean tamarisk in an engineered swale north of and paralleling I-10, and two plants were found in the southwestern corner of the solar plant site (TetraTech EC and Karl, 2011a). Cal-IPC has declared this plant highly invasive (Cal-IPC, 2006) and it is a CDFA "B" rated species. A B-rated pest is of known economic or environmental detriment and, if present in California, it is of limited distribution. If found in the state, it is subject to state-endorsed holding action and eradication only to provide for containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner it is subject to eradication, containment, suppression, control, or other holding action. Salt cedar is associated with many ecological impacts including impacts to channel geomorphology, groundwater availability, plant species diversity, and fire frequency (Sanders, 1998). Salt cedar can also affect sand dunes by blocking sand movement, a vital part of the natural function of these habitats (CDFG, 2007).

Mediterranean grass (*Schismus arabicus, S. barbatus*) is prevalent throughout Sonoran creosote bush scrub within the study area. Mediterranean grass is an annual that reproduces by seed, and is widespread in arid and semi-arid California landscapes. This species competes effectively with native plants for nutrients and water and can provide cover that prevents native annuals from sprouting (VanDevender et al., 1997; Brossard et al., 2000) and contributes to dune stabilization (CDFG, 2007). Historically, fire was rare in the Colorado Desert. However, the presence of Mediterranean grass or other annual non-native grasses has provided a continuous and increased fuel load, influencing the extent, frequency, and intensity of fire in these ecosystems (Brooks and Pyke, 2001; Brooks et al., 2004). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to eradicate.

Red brome (*Bromus madritensis* ssp. *rubens*) is an introduced Eurasian grass adapted to microhabitats that can be frequently found at the base of desert shrubs. It can also form carpet cover in pockets of fine-grained soils in rough terrain off the bajada. It is found throughout California, especially in southern California, and is spreading rapidly in many vegetation communities including desert scrub. Seeds from this species can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC, 2006). Because of its widespread distribution, red brome is not considered feasible for general control.

3.3.1.3 Special-Status Plants

Special-status plants are those species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. For the purposes of this PA/FEIS, special-status species are defined as meeting one or more of the following criteria:

1. Listed as threatened or endangered or candidates for future listing as threatened or endangered under the FESA or CESA;

2. Listed as species of concern by CDFG;

3. A plant species considered by the CNPS to be “rare, threatened, or endangered in California” (CNPS List 1A, 1B, and 2) as well as CNPS List 3 and 4[1] plant species;

4. A plant listed as rare under the California Native Plant Protection Act[2];

5. Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or

[1] List 3 and 4 plants are included in the CNDDB’s Special Plants, Bryophytes, and Lichens List. [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking (CDFG, 2011).

[2] As defined by the California Native Plant Protection Act, a plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901) (CDFG, 2011).

6. All BLM Sensitive species.[3]

Table 3.3-2 lists those special-status plant species evaluated during the analysis that are known or could potentially occur in the vicinity of the Project. Seven special-status plants were observed within the study area during spring 2011 floristic surveys, and include: desert unicorn plant, Harwood‘s milk-vetch, Harwood's eriastrum, Las Animas colubrina, ribbed cryptantha, Utah milkvine, and Abram's spurge (Tetra Tech EC and Karl, 2011a; 2011b).

Rare plant surveys have been completed for the proposed action, including the solar plant site and project linears. Botanical surveys have been performed on the Alternative 3 routes that traverse the BSPP site; however, surveys were performed during a low rainfall year and may not fully represent the distribution of some special-status species within the alignments. Special-status species detected within the vicinity are discussed in more detail below. The findings of spring 2011 botanical surveys of the study area are incorporated into the discussion below. The location of identified special-status plants in the study area is presented in Figure 3.3-5.

Desert Unicorn Plant

Status: Desert unicorn plant is a CNPS List 4.3 species meaning it is not currently threatened or vulnerable but considered to have limited distribution in California. Desert unicorn plant is also a plant species covered under the NECO Plan (BLM, 2002) and it has a CNDDB (NatureServe) Global and State Rank of G5 S3.3.

Distribution: This plant occurs in Sonoran desert scrub habitats in San Bernardino, Imperial, and Riverside counties of California, and extends south into Baja and east into New Mexico. There are 13 records known from the NECO planning area in Milipitas Wash, Chuckwalla Valley, and Chemehuevi Valley (BLM, 2002). There are no records in the CNDDB for the state of California, but there are 36 records in the Consortium of California Herbaria from Riverside, Imperial, San Bernardino, and San Diego counties, several of which are from the Chuckwalla Mountains and Desert Center area and the Ford Dry Lake area (Consortium of California Herbaria [CCH], 2011).

Habitat and Biology: This perennial herb grows on deep, alluvial sands in Sonoran Desert Scrub habitat at elevations below 3,300 feet. Desert unicorn plant has a fleshy root system that can remain dormant in dry years. It typically grows and flowers between July and September after substantial summer rains. However, some individuals have aboveground growth in spring, and fruits (seed pods) from the previous year are large and moderately visible, so presence of this species can be established outside the flowering season.

Status in Project Site: While thought to be uncommon in California, Desert unicorn plant was found to be quite common on the Project solar plant site, primarily in swales that held water for a short time. This species is distributed throughout the central part of the solar plant site and in

[3] BLM designates "Sensitive" species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species that were so designated within the last 5 years, and CNPS List 1B species that occur on BLM lands.

TABLE 3.3-2
SPECIAL-STATUS PLANTS KNOWN TO OCCUR OR WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name[a]	Scientific Name	Status State/Fed/CNPS/BLM/ Global Rank/State Rank [e]
Plants		
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1/S/G5T3T4/S2.1
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1.3
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2[b]
Harwood's milk-vetch	***Astragalus insularis var. harwoodii***	**__/__/2.2/__/G5T3/S2.2?**
Coachella Valley milk-vetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2./S/G5T2/S2.1
California ayenia	*Ayenia compacta*	E/__/2.3/__/G4/S3.3
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2.3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4?/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G3/S2.2
Abram's spurge	***Chamaesyce abramsiana***	**__/__/2.2/__/G4/S1.2**
Arizona spurge	*Chamaesyce arizonica*	R/__/2.3/__/G5/S1.3
Flat-seeded spurge	*Chamaesyce platysperma*	__/__/1B.2/S/G3/S1.2?
Las Animas colubrina	***Colubrina californica***	**__/__/2.3/__/G4/S2S3.3**
Spiny abrojo/Bitter snakeweed	*Condalia globosa var. pubescens*	__/__/4.2/__/G5T3T4/S3.2
Foxtail cactus	*Coryphantha alversonii*	__/__/4.3/__/G3/S3.2
Ribbed cryptantha	***Cryptantha costata***	**__/__/4.3/__/G4G5/S3.3**
Winged cryptantha	*Cryptantha holoptera*	__/__/4.3/__/G3G4/S3?
Wiggins' cholla	*Cylindropuntia wigginsii (syn=Opuntia wigginsii)*	__/__/3.3/__/G3?Q/S1.2?
Utah milkvine	***Cynanchum utahense***	**__/__/4.2/__/G4/S3.2**
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1S2
California ditaxis	***Ditaxis serrata var. californica***	**__/__/3.2/__/G5T2T3/S2.2**
Harwood's eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/S/G2/S2**
California satintail	*Imperata brevifolia*	__/__/2.1__/G2/S2.1
Cottontop cactus	*Echinocactus polycephalus* var. *polycephalus*	**__/__/__/__/__/__**
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G4/S3.3
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2/__/G5/S2
Spearleaf	*Matelea parvifolia*	__/__/2.3/__/G5?/S2.2
Argus blazing star[c]	*Mentzelia puberula*	__/__/__/__/__/__
Slender woolly-heads	*Nemacaulis denudata var. gracilis*	__/__/2.2/__/G3G4T3?/S2S3
White-margined penstemon	*Penstemon albomarginatus*	__/_ /1B.1/S/G2/S1
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S1.3
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	***Proboscidea althaeifolia***	**__/__/4.3/__/G5/S3.3**
Orocopia sage	*Salvia greatae*	__/__/1B.3./S/G2/S2.2
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2?
Cove's cassia	*Senna covesii*	__/__/2.2/__/G5?/S2.2

TABLE 3.3-2 (Continued)
SPECIAL-STATUS PLANTS KNOWN TO OCCUR OR WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status State/Fed/CNPS/BLM/ Global Rank/State Rank [e]
Plants (cont.)		
Mesquite nest straw	*Stylocline sonorensis*	__/__/1A/__/G3G5/SX
Dwarf germander	*Teucrium cubense ssp. depressum*	__/__/2.2/__/G4G5T3T4/S2
Jackass clover	*Wislizenia refracta ssp. refracta*	__/__/2.2/__/G5T5?/S1.2?
Palmer's jackass clover[d]	*Wislizenia refracta ssp. palmeri*	__/__/--/__/__/__

NOTES:

a Species highlighted in **bold-face type** were identified during surveys of the study area.
b As defined by the California Native Plant Protection Act, a plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901) (CDFG, 2011).
c Proposed new addition to the CNPS Inventory (Andre, 2010, as cited in CEC, 2010a)
d Proposed new addition to the CNPS Inventory (Silverman, 2010, as cited in CEC, 2010b)
e Note that question marks signify CDFG uncertainty due to a lack of comprehensive distribution data

Status Codes:

Federal

FE = Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

State

SE = State listed as endangered
ST = State listed as threatened
R = State characterized as rare

California Native Plant Society

List 1A = Includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Bureau of Land Management

BLM Sensitive = Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840 (BLM, 2008).

Global Rank/State Rank

Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values

G1 or S1 = Fewer than 6 viable element occurrences (EOs) OR fewer than 1,000 individuals
G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals
G3 or S3 = 21-100 EOs OR 3,000-10,000 individuals
G4 or S4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 or S5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical

.1 = very threatened
.2 = threatened
.3 = no current threats known

SOURCES: CNDDB, 2011; Tetra Tech EC and Karl, 2011a; 2011b portions of the gen-tie line. Greater than 55 plants were detected throughout the Survey Area in spring 2011, and 622 plants were found in fall 2011 (Tetra Tech EC and Karl, 2011a; 2011b).

Abram's Spurge

Status: Abram's spurge is a CNPS List 2.2 species, meaning it is rare in California but more common elsewhere.

Distribution: This annual herb is native to California at elevations ranging between sea level and 915 feet in Imperial, Riverside, San Bernardino, and San Diego Counties. The CNDDB notes 15 records in California. Two observations are from Riverside County: a 1968 record from the Coachella Valley and a 2000 record about 22 miles west of Blythe (CNDDB, 2011).

Habitat and Biology: Abram's spurge is reported from creosote bush scrub communities in sandy or silty soils. Observed plants on the Project site were found in very fine, compacted silt soils with low sand composition.

Status in Project Site: During fall 2011 surveys, Abram's spurge was found on the Project site primarily within the central portion of the solar plant site and an additional population along the gen-tie line north of I-10. Abram's spurge was not found south of I-10. The total population size in the Survey Area is estimated to be approximately 4,000 individuals. It was found almost exclusively in shallow depressions and runnels where it was patchily distributed.

Based on a follow-up survey of suitable habitats (swales and playas) in the Blythe area and Chuckwalla Valley, tens of thousands of plants were noted along Ford Dry Lake and also on Hayfield Dry Lake, approximately 20 and 60 miles west of Project, respectively. Abram's spurge was the dominant or co-dominant understory species in both locations. So, although the species occurs on Project, it is neither restricted to that site nor does it reach its highest abundance there. This species is more widespread in the Blythe region than formerly known or documented in the scientific literature base (Tetra Tech EC and Karl, 2011b).

California Ditaxis

Status: California ditaxis is a CNPS List 3 species, meaning that more information is needed about this species to determine its rarity.

Distribution: The CNPS reports 20 occurrences with several records near the I-10 corridor between approximately Palm Desert and Desert Center (CNPS, 2011). The nearest reported record to the Project is from the Chuckwalla Valley approximately 30 miles west of the Project.

Habitat and Biology: This perennial herb occurs at elevations ranging between 30 and 1,000 feet in sandy soils of creosote bush scrub. It grows in spring and fall, in response to rain, with aboveground portions dying back in dry periods.

Status in Project Site: Two populations consisting of four plants were found to the immediate west of the solar plant site boundary during fall 2011 surveys (Tetra Tech EC and Karl, 2011b). This species also blooms in spring; however, was not observed during Project spring 2011 surveys (Tetra Tech EC and Karl, 2011a). The identified plants were located within the study area but outside of the area of Project disturbance.

Harwood's Milk-vetch

Status: Harwood's milk-vetch is a CNPS List 2.2 plant species, which means that it is classified as fairly endangered in California, but more common elsewhere (CNPS, 2011); it is also a plant species covered under the NECO Plan (BLM, 2002) (Figure 3.3-6).

Distribution: This is an annual herb species that mainly occurs in Sonoran desert scrub habitat and occurs throughout the Colorado Desert (BLM, 2002). It is documented with 21 occurrences in CNDDB and 42 records in the California Consortium of California Herbaria (roughly half of which are duplications of the CNDDB occurrences).

Habitat and Biology: This annual herb in the Fabaceae family grows in sand-based soils of the Sonoran creosote bush scrub community, at elevations of 300 to 1,200 feet. Blooming occurs from February to May, depending on ambient temperatures and rainfall. In most years, the species is present within its range in low numbers, often in graded areas such as otherwise denuded road shoulders, probably a response to scarification of the seed coat by machinery. In high rainfall years, it is very abundant, especially in old road berms. It can be distinguished from the generally more common and widespread, sympatric *Astragalus aridus* by its nearly glabrous, spreading to reflexed, inflated pods; more subtle differences include leaflet separation and shape (Tetra Tech EC and Karl, 2011a).

Status in Project site: Harwood's milk-vetch was found on the Project site in swales of the eastern portion of the solar plant site, and scattered on the linear corridors, and switchyard. The population size in the entire Survey Area is estimated to be greater than 465 individuals (Tetra Tech EC and Karl, 2011a).

Las Animas Colubrina

Status: Las Animas colubrina is a CNPS List 2.3 species, indicating it is rare but not very endangered in California and more common elsewhere; it is also a plant species covered under the NECO Plan (BLM, 2002) (Figure 3.3-7).

Distribution: This 6- to 10-foot-tall, deciduous shrub is native to southeastern California, Arizona, Baja California and northern Sonora, Mexico (CNPS, 2011).

Habitat and Biology: The Las Animas colubrina is commonly found in the drainages and runoff areas of rocks in the creosote bush scrub plant community of the Sonoran Desert at elevations below 3,300 feet. The species usually blooms in April and May, depending on the timing of winter storms.

Status in Project Site: The conspicuous species is common in the drainages of the western portion of the solar plant site, although never abundant. The total approximate population size estimated at greater than 267 plants (Tetra Tech EC and Karl, 2011a).

Ribbed Cryptantha

Status: Ribbed cryptantha is a CNPS List 4.3 species, meaning it has a limited distribution but is not very endangered in California.

Distribution: Ribbed cryptantha typically occurs in loose friable soils in the eastern Mojave and Sonoran deserts in Imperial, Riverside, San Diego, and San Bernardino counties (CNPS, 2011). Ribbed cryptantha occurs in the eastern Mojave Desert and the Sonoran Desert from California to Arizona and south to Baja California, Mexico.

Habitat and Biology: The Ribbed cryptantha commonly occurs in stabilized and partially stabilized desert dunes and sandy areas of Sonoran and Mojavean desert creosote bush scrub, which is the primary vegetation community that characterizes the study area. There are 116 records of this species in the Consortium of California Herbaria database from several locations throughout Riverside, San Diego, and Imperial counties (CCH, 2010 as cited in CEC, 2010b).

Status in Project Site: Most sand sheets in the study area were found to host ribbed cryptantha, which was distributed on the gen-tie line south of I-10. Populations were scattered but large, with total numbers estimated at greater than 1,715 plants (Tetra Tech EC and Karl, 2011a).

Harwood's Eriastrum (Harwood's phlox)

Status: Harwood's eriastrum, also known as Harwood's phlox, is a BLM Sensitive spring annual known from fewer than 20 occurrences worldwide. It is a CNPS List 1B.2 species, which indicates it is rare, threatened, or endangered throughout its range.

Distribution: The distribution of this species is restricted to 14 known occurrences in San Diego, Riverside, and San Bernardino counties, typically in dunes associated with the margins of dry lakes such as Dale, Cadiz, and Soda lakes.

Habitat and Biology: This species is associated with sandy plains or dunes, but typically semi-stabilized soils (CNPS, 2011).

Status in Project Site: Harwood's phlox is distributed in the sand dunes and sheets of the switchyard and gen-tie line. The total population size identified in the Survey Area is greater than 386 individuals (Tetra Tech EC and Karl, 2011a).

Utah Milkvine

Status: Utah milkvine is on CNPS List 4.2, which indicates it is not rare or endangered from a statewide perspective but there are known or documented threats.

Distribution: The range of this species in California includes San Diego, Imperial, Riverside, and San Bernardino counties, and also extends into portions of Arizona, Nevada, and Utah. As a CNPS List 4, it is not tracked by CNDDB, but there are 58 records of this species from the Consortium of California Herbaria database, primarily from San Bernardino and San Diego counties. There is one local record from the nearby Big Maria Mountains from wash and stabilized dune habitat at approximately 1,200 feet elevation (CCH, 2010 as cited in CEC, 2010b).

Habitat and Biology: This species occurs in Mojavean and Sonoran desert scrub habitats, typically sandy or gravelly soils, from approximately 500 feet to 4,300 feet in elevation (CNPS, 2011).

Status in Project Site: On the Project site, it is common to patchily abundant in many drainages, including small runnels. Plants most frequently grew through other plants, using the latter for structure, but also grew independently on the ground. Population size within the Survey Area is estimated at greater than 5,180 plants (Tetra Tech EC and Karl, 2011a).

Other special-status plants that were not detected and not expected in the study area are found in Table 3.3-3.

3.3.2 Applicable Regulations, Plans, and Standards

This section provides a discussion of federal, state, and regional environmental regulations, plans, and standards applicable to the Project for vegetation resources and federal and state jurisdictional areas.

3.3.2.1 Federal

National Environmental Policy Act

NEPA (42 USC §4321 et seq.) declares a continuing federal policy that directs “a systematic, interdisciplinary approach” to planning and decision-making and requires environmental statements for “major Federal actions significantly affecting the quality of the human environment.” Implementing regulations by the CEQ (40 CFR Parts 1500-1508) requires federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions. The BLM is the Lead Agency under NEPA for the Project.

Executive Order 13112 – Invasive Species

Executive Order 13112 was signed in February 1999 and established the National Invasive Species Council. This Order requires agencies to identify actions that may affect the status of invasive species. It also directs federal agencies not to authorize, fund, or carry out actions that they believe are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that the agency has prescribed, it has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

TABLE 3.3-3
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants		
Angel trumpets *Acleisanthes longiflora*	This species occurs in Sonoran desert scrub habitats on carbonate soils from approximately 200 to 300 feet amsl. There are two records from the Consortium of California Herbaria from the Colorado Desert, Palo Verde area (CCH, 2010 as cited in CEC, 2010b).	This species is not expected to occur within the study area primarily since carbonate/limestone derived soils in mountainous areas do not occur within the study area (Tetra Tech EC and Karl, 2011a). Also, the Project site is located at a higher elevation than the typical elevation where this species has been reported. The nearest record of this species is in the Big Maria Mountains approximately 11 miles east of the study area (Tetra Tech EC and Karl, 2011a).
Argus blazing star *Mentzelia puberula*	This plant species occurs in desert scrub and desert woodlands with limestone and granitic slopes above 2,000 feet in elevation. Based on 13 Consortium of California Herbaria database records for this species, this species has been collected from Riverside, San Bernardino, and Imperial counties from the Little and Big Maria Mountains in Riverside County.	This species is not expected to occur in the study area due to lack of limestone and granitic slopes which are soil types preferred by this species that are absent from the study area (Tetra Tech EC and Karl, 2011a). The Project site is located at or below 800 feet amsl, which is below the typical elevation where this species typically occurs.
Arizona spurge *Chamaesyce arizonica*	This species occupies sandy, Sonoran desert scrub habitat areas and has been reported from Imperial, Riverside, San Diego counties and portions of Arizona and Baja, California (CNPS, 2011) from approximately 150 feet to 1,200 feet amsl. There are 7 database records from the Consortium of California Herbaria primarily from San Diego County but also Riverside and Imperial counties often from sandy areas and transition areas between chaparral and desert habitats. The record from Riverside County is near Palm Springs from Andreas Canyon (CCH, 2010 as cited in CEC, 2010b).	Arizona spurge has a low potential to occur within the study area due to the presence of suitable habitat and appropriate elevation range of the Project site. Surveys are pending for this species on the Alternative 3 routes.
Bitter hymenoxys *Hymenoxys odorata*	Bitter hymenoxys grows riparian scrub and Sonoran desert scrub habitats from 150 feet to 500 feet amsl. This plant species blooms from February through November (CNPS, 2011). There are five CNDDB records for this species for the entire state of California, two of which occur in Riverside County; the nearest CNDDB occurrence is a historical record approximately 5 miles southeast of the site from sandy slope, low bottom lands and overflow flats (CNDDB, 2011).	This species is unlikely due to its association with the Colorado River floodplain; not observed during appropriately timed field surveys.
Bitter snakeweed *Condalia globosa* var. *pubescens*	Also referred to by the common name, spiny abrojo. Bitter snakeweed occurs in Sonoran desert scrub from approximately 400 feet to 3,000 feet amsl. Bitter snakeweed blooms from March through May (CNPS, 2011). Based on 35 records Consortium of California Herbaria database, all records are from Imperial County except one from Riverside County, a record from 1,900 feet elevation from a relatively flat alluvial fan from Chuckwalla Bench (CCH, 2010 as cited in CEC, 2010b). There are no CNDDB records for this species for the State of California. The nearest record for this species is located approximately 22 miles south of the study area (AECOM, 2010a as cited in CEC, 2010b).	This species was not observed during spring 2011 field surveys and is considered unlikely in the study area.
California ayenia *Ayenia compacta*	This species occurs in Mojavean and Sonoran desert scrub habitats from approximately 500 to 3,300 feet amsl. This species blooms from March through April. There are 29 records from the Consortium of California Herbaria database from the Anza Borrego	This species was not observed during spring 2011. There is a possibility that populations may occur due to the presence of suitable habitat is present in the study area.

**TABLE 3.3-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO
OCCUR AT THE PROJECT STUDY AREA**

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
California ayenia *Ayenia compacta* (cont.)	area alone, one from Riverside County from a sandy wash in the Santa Rosa Mountains off Martinez Canyon (CCH, 2010 as cited in CEC, 2010b). The nearest CNDDB occurrence is a historical record from 1776 approximately 30 miles southwest of the site in the Chuckwalla Mountains (CNDDB, 2011). There is also a known extant population in the vicinity of the adjacent BSPP (AECOM, 2010a as cited in CEC, 2010b).	
California ditaxis *Ditaxis serrata* var. *californica*	This species occupies Sonoran desert scrub habitat and has been reported as occurring from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS, 2011) from approximately 100 to 3,000 feet amsl. There are 23 records from the Consortium of California Herbaria database primarily from Riverside County from sandy, open alluvial fans.	This species was not observed in the Project area during spring 2011; though was detected off-site. There is a possibility that populations may occur due to the presence of suitable habitat in the study area.
California satintail *Imperata brevifolia*	This species occurs in grassy areas found near chaparral, desert scrub, riparian scrubs, coastal scrub, wet springs, meadows, stream sides and floodplains (Solar Millennium, 2009a as cited in CEC, 2010b) from sea level to approximately 1,500 feet amsl. There are 64 records from the Consortium of California Herbaria database from many northern and southern California counties. Records from Riverside County are from the Palm Springs and San Jacinto Mountains area along irrigation ditches or streams.	California satintail is not expected to occur within the study area due to lack of suitable habitat. Not observed during surveys.
Chaparral sand verbena *Abronia villosa* var. *aurita*	This species occupies sandy soil areas of chaparral, coastal sage scrub, and sandy desert dune habitats (CNPS, 2011) from approximately 240 feet to approximately 4,800 feet amsl. There are 147 records in the Consortium of California Herbaria database many from Riverside County in the San Jacinto Mountains area.	Chaparral sand verbena has a low potential to occur in dune portions of the study area; not observed during surveys.
Coachella Valley milk-vetch *Astragalus lentiginosus* var. *coachellae*	The Coachella Valley Multiple Species Habitat Conservation Plan states that this species occurs on "dunes and sandy flats, along the disturbed margins of sandy washes, and in sandy soils along roadsides and in areas formerly occupied by undisturbed sand dunes. Within the sand dunes and sand fields, this milk-vetch tends to occur in the coarser sands at the margins of dunes, not in the most active blowsand areas. As this species is strongly affiliated with sandy substrates, it may occur in localized pockets where sand has been deposited by wind or by active washes. It may also occur in sandy substrates in creosote bush scrub, not directly associated with sand dune habitat (CVAG, 2007). This plant species blooms from February to May, producing pink to deep magenta-colored flowers. This species occurs on aeolian deposits with fewer than 25 occurrences in the Coachella Valley. Coachella Valley milk-vetch depends on natural disturbances from fluvial and aeolian processes for seedling establishment (BLM, 2002).	This species is not expected to occur in the Project area. The distribution of Coachella Valley milk-vetch is restricted to the Coachella Valley in Riverside County, between Cabazon and Indio. CVAG (2007) identifies six outlying occurrences within a 5-mile area along Rice Road in the Chuckwalla Valley north of Desert Center, California (CVAG 2007); however, USFWS staff has indicated that these occurrences are not of the listed taxon (Engelhard, pers. comm. as cited in CEC, 2010a).
Cove's cassia *Senna covesii*	This species occurs on dry, sandy desert washes and slopes of the Sonoran Desert between 1,600 to 2,000 feet amsl. This species occurs in sandy washes, roadsides, alkaline flats in the Mojave Desert and northern Sonoran Desert between 1,600 to 2,000 feet amsl (Solar Millennium, 2009a as cited in CEC, 2010b).	Cove's cassia was not observed during surveys and considered unlikely in the study area. The study area is located below the typical elevation range where this species is known.

TABLE 3.3-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Crucifixion thorn *Castela emoryi*	This species occurs in Sonoran Desert and Mojavean Desert in scrub habitats and playas with dry, gravelly washes, slopes, and plains from approximately 300 to 2,100 feet amsl. There are 64 records in the Consortium of California Herbaria database from Riverside, San Bernardino, Imperial counties among others and often times prefers grassy or hayfield habitats. There is a record from a hayfield in Chuckwalla Valley.	Crucifixion thorn was not observed during surveys and is considered unlikely in the study area.
Desert portulaca *Portulaca hamiloides*	This species occurs in Joshua tree woodlands and has been reported from Riverside, San Bernardino, and portions of Arizona and Baja, California from 3,000 feet to 3,600 feet amsl (CNPS, 2011).	This species is not expected to occur within the study area due to lack of typical habitat associations and the site being located outside of the elevation range. Not observed during surveys.
Desert sand parsley *Ammoselinum giganteum*	This species occupies Sonoran desert scrub habitat and has been reported from Riverside County, California and portions of Arizona (CNPS, 2011) at approximately 1,200 feet elevation. There are 2 records from the Consortium of California Herbaria database from Riverside County from the Chuckwalla Valley where this species was observed growing in dry basins at 500 feet amsl (CCH, 2010 as cited in CEC, 2010b).	Desert sand parsley was not observed during surveys and is considered unlikely in the study area.
Desert spike moss *Selaginella eremophila*	This is a dense, mat-forming, non-flowering plant. This species occurs in Sonoran creosote bush scrub habitats in gravelly or rocky soils from approximately 600 to 2,700 feet. There are 56 records in the Consortium of California Herbaria database from Riverside and San Diego counties with several records from Anza Borrego State Park, Palm Springs, Palm Canyon, and San Jacinto Mountain Range. One collection from Riverside County is from the vicinity of the Chocolate-Chuckwalla Mountain region near the north side of the Orocopia Mountains from sloped rocky, shady surfaces in gravelly soils (CCH, 2010 as cited in CEC, 2010b).	This species is not expected to occur within the study area due to lack of typical habitat. Not observed during surveys.
Dwarf germander *Teucrium cubense* ssp. *depressum*	This species occurs in desert dune, playa margins, and Sonoran desert scrub habitats from approximately 100 feet to 1,200 feet amsl. This species typically blooms from March to May but may also bloom from September through November. This species typically occurs in sandy soils and wash habitats and is known from fewer than 10 occurrences in California (CNPS, 2011). There are 15 records from Consortium of California Herbaria database from Riverside and Imperial counties; there are records from the Chuckwalla Valley in the Hayfield area and Palo Verde Valley. There is a CNDDB record from Wiley's Well Road (400 feet elevation) during 1979 (CNDDB, 2011). Another CNDDB occurrence is a historical record from 1912 located approximately 7 miles southeast of the site from the Palo Verde Valley (CNDDB, 2011).	Dwarf germander has a low potential to occur in the study area; not observed during surveys.
Foxtail cactus *Coryphantha alversonii*	This species occurs on rocky, granitic soils in Sonoran and Mojavean desert scrub habitats from 200 feet to 4,600 feet amsl. Prior to conducting spring 2009 field surveys, a reference population was observed on April 9, 2009 at a gravel pit northwest of Blythe along State Route 95 and several individuals were observed in relatively undisturbed Sonoran creosote bush scrub	Foxtail cactus was not observed during surveys and is considered unlikely in the study area.

TABLE 3.3-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Foxtail cactus *Coryphantha alversonii* (cont.)	on granitic rock, a preferred habitat type of this species (CNPS, 2011). This species was not found during surveys performed in the study area (AECOM, 2010a as cited in CEC, 2010b). There are 25 records of this species from the Consortium of California Herbaria database from Riverside, Imperial, and San Bernardino counties. There are records from the Chuckwalla Valley from rocky, granitic slopes (CCH, 2010 as cited in CEC, 2010b).	
Mesquite nest straw *Stylocline sonorensis*	This species occupies Sonoran desert scrub habitats around 1,300 feet elevation and has been reported from Riverside County and portions of Arizona and Sonora, Mexico (CNPS, 2011). There are 2 records from the Consortium of California Herbaria database from Riverside County both from the Chuckwalla Mountains, Hayfields region from 1930 (CCH, 2010 as cited in CEC, 2010b).	Mesquite nest straw was not observed during surveys and is considered unlikely in the study area.
Orocopia sage *Salvia greatae*	This species occurs in the southeastern Sonoran Desert and is associated with the Orocopia and Chocolate Mountains on alluvial slopes between 100 and 800 feet amsl. This species has been recorded in the mountainous areas 30 miles west of the study area (Solar Millennium, 2009a as cited in CEC, 2010b). There are 49 records from the Consortium of California Herbaria database several from the Chocolate, Chuckwalla, and Orocopia mountain areas (CCH, 2010 as cited in CEC, 2010b).	This species was not documented within the study area.
Pink fairyduster *Calliandra eriophylla*	This species occurs in the Sonoran Desert in sandy washes, slopes and mesas from 350 to 5,000 feet amsl. There are 62 records from the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains area in Imperial and San Diego counties (CCH, 2010 as cited in CEC, 2010b).	Pink fairy duster was not observed during surveys and is considered unlikely in the study area.
Pink velvet mallow *Horsfordia alata*	This species occurs in the Sonoran Desert in California, Arizona, and Mexico. It occurs in Sonoran desert scrub habitats from approximately 300 to 1,500 feet amsl.	Pink velvet mallow has a low potential to occur in the study area; not observed during surveys.
Sand evening-primrose *Camissonia arenaria*	This species occupies sandy and gravelly areas of Sonoran desert scrub habitat and has been reported from Imperial and Riverside counties and areas of Arizona and Mexico from 200 feet to 2,700 feet amsl (CNPS, 2011). There are 13 records of this species in the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains, Palo Verde Valley, and Ogilby Pass area (CCH, 2010 as cited in CEC, 2010b).	This species has a low potential to occur in the study area; not observed during surveys.
Slender woolly-heads *Nemacaulis denudata* var. *gracilis*	This species occupies desert sand dunes, coastal dunes, and Sonoran desert scrub (CNPS, 2011) from 150 to 1,200 feet amsl. There are 45 records in the Consortium of California Herbaria database from the Palm Springs, Indian Wells area in Riverside County (CCH, 2010 as cited in CEC, 2010b).	Slender woolly-heads have a low potential to occur in the study area; not observed during surveys.
Small-flowered androstephium *Androstephium breviflorum*	This species occurs in desert dune and Mojavean desert scrub habitats from approximately 700 feet to 2,000 feet amsl (CNPS, 2011). This species blooms from March through April and often occurs on desert bajadas.	This species was not documented within the study area.

TABLE 3.3-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Spearleaf *Matelea parvifolia*	This species occurs in Mojavean and Sonoran desert scrub habitats from 1,320 feet to approximately 3,300 feet amsl. This species blooms from March through May (CNPS, 2011). The nearest CNDDB record for this species is from the Chuckwalla Bench area during 1986 from desert dry wash woodland and creosote scrub habitats (CNDDB, 2011).	This species has a low potential to occur in the study area; not observed during surveys.
Wiggins' cholla *Cylindropuntia wigginsii*	Wiggins' cholla is not recognized as a species, but is considered a hybrid of silver cholla (*C. echinocarpa*) and pencil cholla (*C. remosissima*). Wiggins' cholla is not found as a separate species in The Jepson Manual nor in Munz's et al. A California Flora and Supplement; however, the BLM's Proposed Northern and Eastern Colorado Desert Coordinated Management Plan identifies Wiggins' cholla as a special-status species (BLM, 2002). The CNPS recognizes Wiggins' cholla as a CNPS List 3.3 species meaning more information is needed about this species and is not considered very endangered in California and also considers this species a sporadic hybrid of the two *Cylindropuntia* species mentioned above (CNPS, 2011).	Since this species is not a recognized subspecies, Wiggins' cholla is not expected to occur in the vicinity of the proposed action.
White-margined penstemon *Penstemon albomarginatus*	This species is a perennial herb restricted to sandy substrates in desert dunes and Mojavean desert scrub habitats, from 2,000 to 3,000 feet elevation. It appears to be restricted to the southeastern Mojave Desert ecoregion (BLM, 2006; The Nature Conservancy [TNC], 2007) and has no known occurrences as far south as Riverside County. It blooms March through May and flowering does not always appear to be dependent on the amount of rainfall (CNPS, 2011, BLM, 2006). It is believed that established plants may bloom even in very dry years by utilizing water and food resources that are stored in the large taproot (1 to 4 feet long); however rain probably affects germination rates of this species (BLM, 2006; TNC, 2007). In California, this plant often occurs in fine alluvial sand and in wide canyons within a creosote bush scrub community; sandy environments help establish and hold the deep taproot of this species. This species also occurs in deep, loose to stabilized sand, sometimes on sand dunes or in sandy to gravelly washes. Common associate plant species are white bursage, galleta grass, rice-grass, creosote bush, range rattany, goldenhead, and winterfat (TNC, 2007). In Nevada, this species commonly grows along the base of hills and mountains in wind-blown sand dune-like areas, but is also found in deep loose sand in wash bottoms.	White-margined penstemon was not documented within the study area. This species occurs in southern Nevada, western Arizona, and in the western Mojave Desert in San Bernardino County (BLM, 2006). Its distribution in the western Mojave Desert is restricted, occurring in a large four-mile long wash near Pisgah Crater and Lavic Lake, extending southwest from Sleeping Beauty Peak, crossing Interstate 40, and terminating in a flat spreading basin south of Interstate 40 (BLM, 2006). There are 19 recent CNDDB records for the entire state of California all of which are from San Bernardino County near the vicinity of Highway 40 and Pisgah Crater (CNDDB, 2011). There are 40 records of this species from the Consortium of California Herbaria database from the same general Ludlow and Lavic areas in San Bernardino County; most of these records are from sandy substrates associated with dry desert washes and desert scrub habitats (CCH, 2010 as cited in CEC, 2010b). It has low potential to occur in the Project area but is included here because it has been found outside its previously documented range (Andre, 2010, as cited in CEC, 2010a) and is a species of particular concern to BLM due to threats across its restricted range. Applicants were directed to include this species in botanical survey lists.

SOURCES: CEC 2010; CNDDB 2011; Tetra Tech and Karl, 2011

Plant Protection Act of 2000

The Plant Protection Act of 2000 (7 USC Ch. 104) established a federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to publish a list of plants designated as noxious weeds (7 USC §7712(f)). The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.

Lacey Act, as amended

The Lacey Act (16 USC §§3371-3378) protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport or sale of protected species.

Federal Endangered Species Act

The FESA (16 USC §1531 et seq.) designates threatened and endangered species, both animal and plant species, and provides measures for their protection and recovery. “Take” of listed wildlife, and of listed plant species located on federal land, is prohibited without obtaining a federal permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS for terrestrial species. The FESA also generally requires determination of critical habitat for listed species. If critical habitat has been designated, impacts to areas that contain the primary constituent elements identified for the species, whether or not it is currently present, is also prohibited. FESA §7 and §10 provide two pathways for obtaining authority to take listed species.

For projects proposed on federal lands, federal agencies, such as the BLM are required by the FESA to ensure that any action they authorize, implement, or fund, including energy developments, will not jeopardize the continued existence of any federally threatened or endangered species or destroy or adversely modify designated critical habitat. In a §7 consultation, the lead agency (e.g., BLM) prepares a BA that analyzes whether the project is likely to adversely affect listed wildlife or plant species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action would adversely affect the species, the USFWS then has 135 days to respond to the BA by issuing its BO determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat.

If a “nonjeopardy” or “no adverse modification” opinion is provided by the USFWS, the action agency may proceed with the action as proposed. If a jeopardy or adverse modification opinion is provided, the USFWS may prepare a BO with reasonable and prudent measures to minimize take and associated, mandatory terms and conditions that describe the methods for accomplishing the reasonable and prudent measures. In a BO that results in a jeopardy or adverse modification conclusion, the USFWS may develop mandatory reasonable and prudent alternatives to the proposed action.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already federally listed, proposed, or candidate species, or state listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special-status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

CDCA Plan

The CDCA Plan (BLM, 1980) covers approximately 25 million acres of land in southern and southeastern California, with approximately 10 million acres being administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The multiple use classes comprise the backbone of the CDCA Plan, essentially zoning the CDCA into four major use categories, as a city or county is zoned for land use classes. The CDCA Plan categories include approximately 4 million acres of Class C (controlled) lands (including roughly 3,600,000 acres of wilderness areas created under the 1994 CDPA) to be preserved in a natural state with access generally limited to non-motorized, non-mechanized means; approximately 4 million acres of Class L (limited use) lands, providing for generally lower intensity, carefully controlled uses that do not significantly diminish resource values; approximately 1.5 million acres of Class M (moderate use) lands designated for mining, livestock grazing, recreation, energy, and utility development with mitigation required for any damage caused by permitted uses; and approximately 500,000 acres of Class I (intensive use) lands managed for concentrated uses with reasonable protection provided for sensitive natural values and mitigation of impacts and rehabilitation of impacted areas occurring when possible. The CDCA Plan's goals and actions for each resource are established in its 12 elements including the Vegetation Element and the Energy Production and Utility Corridors Element, among several others. The Project site is located within Class L lands (BLM, 1980).

According to the Plan's Multiple Use Class Guidelines, wind/solar power plants may be allowed within Class L lands after NEPA requirements are met. The Energy Production and Utility Corridors Element section of the Plan states, however, that "Plan amendment procedures will adequately provide for the coordination needed for assuring rapid implementation of these important fuel-replacement alternative energy programs in an environmentally sound manner" (BLM, 1980).

NECO Plan

The NECO Plan is a landscape-scale, multi-agency planning effort approved in 1992 that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The NECO planning area encompasses over 5 million acres and hosts 60 sensitive plant and animal species. NECO amends the 1980 CDCA plan to provide additional protections to wildlife and plants, particularly the desert tortoise. The Project site is located within the NECO planning area. A summary of the major plan amendment decisions of NECO includes:

1. Establish Regional Standards for Public Land Health and set forth guidelines for grazing management
2. Establish two DWMAs encompassing about 1.75 million acres that are managed as Areas of Critical Environmental Concern for recovery of the desert tortoise.
3. Establish the Southern Mojave and Sonoran WHMAs or bighorn sheep totaling over 1 million acres and 13 multi-species WHMAs totaling over 500,000 acres such that 80 percent of the distribution of all special-status species and all natural community types are included in conservation management areas.
4. Combine Herd Management Areas for wild horses and burros and adjust the Appropriate Management Levels.
5. Designate routes of travel (approximately 95 percent of existing routes will remain available for vehicle access).
6. Identify priorities for potential acquisition of private lands and disposal of public lands.
7. Provide access to resources for economic and social needs.
8. Incorporate 23 wilderness areas (totaling over 1 million acres) established by the 1994 California Desert Protection Act in the CDCA.

Approved mitigation measures were presented in Appendices D through G of the Proposed NECO Plan and Final Environmental Impact Statement (FEIS) relating to desert tortoise, desert restoration, public education, and limitations on cumulative new surface disturbance. All practicable means to avoid or minimize environmental harm by the plan have been adopted.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC §§661-666) applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term “wildlife” includes both animals and plants. Provisions of the Act are implemented through the NEPA process and §404 permit process.

3.3.2.2 State

California Endangered Species Act

The CESA (Fish and Game Code §2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species that are listed or candidates for listing by the State of California.

Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects are not listed by the State. Take is defined similarly to but more narrowly than FESA and is prohibited for listed species. Take authorization for listed and candidate species may be obtained by the project applicant from CDFG under CESA §2081 or §2080.1 if incidental to otherwise lawful development projects. In this case, private developers consult with CDFG to develop a set of measures and standards for managing the listed or candidate species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

Other Sections of the California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFG cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of the CDFG to maintain viable populations of all native species. To that end, the CDFG has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

California Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 directed the CDFG to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The CESA expanded on the original NPPA and enhanced legal protection for plants, but the NPPA remains part of the Fish and Game Code. To align with federal regulations, the CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in the CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFG and the project proponent.

Porter-Cologne Water Quality Control Act

The intent of the Porter-Cologne Water Quality Control Act (Water Code Div. 7, §13000 et seq.) is to protect water quality and the beneficial uses of water, and applies to both surface and groundwater. Under this law, the California State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne include isolated waters that are no longer regulated by ACOE. Developments which impact jurisdictional waters must demonstrate compliance with the goals of the Act by developing Storm Water Pollution Prevention Plans (SWPPP), Standard Urban Storm Water Mitigation Plans, and other measures in order to obtain a CWA §401 certification.

Lake and Streambed Alteration Program

Prior to commencement of any activity that would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, the applicant shall submit a complete Lake or Streambed Alteration Program notification package and fee to the CDFG. The Lake and Streambed Alteration Program is a California law that requires that any person, state or local government agency, or public utility notify the CDFG prior to beginning of the activities listed above. The CDFG has 30 days to review the proposed actions and propose measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFG and the project proponent becomes the Lake or Streambed Alteration Agreement. The conditions of agreement and a CWA §404 permit often overlap.

3.4 Biological Resources – Wildlife

This section describes the environmental setting and wildlife resources present or with potential to occur on the Project site. The Wildlife Resources study area describes the area characterized and surveyed for biological resources and included the 4,496-acre Project site with general and focused wildlife surveys performed at 100 percent ground coverage, an additional 500-foot buffer for burrowing owls that was surveyed with 30-foot-wide walking transects every 100 feet, and two walking transects at 1,310 feet (400 meters) and 1,970 feet (600 meters) for desert tortoise. The 13,897-acre study area included up to approximately 7,700 acres of public land administered by the BLM and approximately 477 acres of private land under the land use jurisdiction of the County. Desert tortoise surveys also were conducted in the 1,733-acre desert tortoise translocation area located immediately west of the Project site. Additional surveys included avian point count surveys, raptor counts, and focused gila woodpecker/gilded flicker surveys. Helicopter surveys for golden eagle considered the Project site and a 10-mile survey buffer, for a total survey area of approximately 314 square miles.

The entirety of the Project site and study area supports a variety of desert-adapted wildlife that use the natural plant communities described in Section 3.3, *Biological Resources - Vegetation*. This section was compiled, in part, based on the focused studies for the Project and the findings and supporting technical analysis for the CEC's Revised Staff Assessment for the adjacent BSPP, March 2010.

Reptile residents include side-blotched lizard (*Uta stansburiana*), Mojave fringe-toed lizard (*Uma scoparia*), common chuckwalla (*Sauromalus ater*), desert iguana (*Dipsosaurus dorsalis*), western whiptail (*Aspidoscelis tigris*), sidewinder (*Crotalus cerastes*), and desert patch-nosed snake (*Salvadora hexalepis* ssp. *hexalepis*). Typical birds include verdin (*Auriparus flaviceps*), greater roadrunner (*Geococcyx californianus*), black-tailed gnatcatcher (*Polioptila melanura*), ash-throated flycatcher (*Myiarchus cinerascens*), and great-tailed grackle (*Quiscalus mexicanus*), while mammals are represented primarily by round-tailed ground squirrel (*Xerospermophilus tereticaudus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), desert kangaroo rat (*Dipodomys deserti*), pocket mice (*Chaetodipus* spp.), and black-tailed jackrabbit (*Lepus californicus*) (Tetra Tech EC and Karl, 2011a).

3.4.1 Environmental Setting

3.4.1.1 Special-Status Animal Species

Special-status wildlife consists of species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status wildlife is defined as meeting one or more of the following criteria:

1. Listed as threatened or endangered or candidates for future listing as threatened or endangered under the CESA or FESA;

2. Protected under other regulations (e.g., Migratory Bird Treaty Act (MBTA); Bald and Golden Eagle Protection Act (BGEPA));

3. Identified as a species of special concern by the CDFG;

4. Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region, or is so designated in local or regional plans, policies, or ordinances; or

5. Fully protected species protected under FGC §§3511, 4700, 5050, and 5515; or

6. Nesting birds protected under FGC §§3503 and 3513.

The BLM designates Sensitive species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species which were so designated within the last 5 years, and CNPS List 1B species that occur on BLM lands. For the purposes of this document, all BLM Sensitive species are treated as special-status species.

An assessment of the distribution of special-status wildlife resources in the study area relied on a literature review, biological reconnaissance surveys and coordination with appropriate permitting agencies and resource specialists. In advance of surveys, researchers reviewed the CNDDB and the distribution of special-status species reported by the BLM in the CDCA NECO Plan area. The following site-specific and Project-specific documents also were reviewed:

1. Tetra Tech EC, Inc. and Alice E. Karl, Ph.D., 2011a. *Biological Resources Technical Report, McCoy Solar Energy Project, Riverside County, CA* (August 8, 2011).

2. Tetra Tech EC, Inc. and Alice E. Karl, Ph.D., 2011b. *Fall 2011 Plants and Supplemental Wildlife Survey Report, McCoy Solar Energy Project, Riverside County, CA* (December, 2011).

3. Tetra Tech EC, Inc., 2011. *Golden Eagle Risk Assessment, McCoy Solar Energy Project, Riverside County, CA* (August 8, 2011).

Focused biological surveys were conducted by qualified wildlife biologists who were familiar with wildlife resources in the Project vicinity. Wildlife field surveys for desert tortoise, gila woodpecker and gilded flicker, burrowing owl, golden eagle, and other wildlife species were conducted in 2011. Avian point count surveys and raptor counts were also performed in 2011. Survey reports that include survey timing and methods are presented in Appendix C-1 and C-2 (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). The purpose of field surveys was to characterize wildlife use of the study area. Surveys focused on the proposed 4,500-acre solar plant site and linear facilities disturbance area, with additional buffer areas depending upon species. Desert tortoise surveys were performed to a distance of 1,968 feet (600 meters) from the Project site; burrowing owl surveys considered a study buffer of 500 feet from the Project site; and golden eagle helicopter surveys included an approximately 10-mile study buffer. Results of the literature review and field surveys were summarized in two biological resources reports (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). The BLM's consultant, Environmental Science Associates (ESA), verified the biological conditions of the Project site on September 13, 2011. Table 3.4-1 identifies those special-status wildlife species that were evaluated during the analysis and their likelihood to occur in the Project area and vicinity. Only special-status wildlife detected within the study area, or likely to occur within the study area, are discussed in more detail below.

TABLE 3.4-1
SPECIAL-STATUS WILDLIFE KNOWN TO OR WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name[a]	Scientific Name	Status State/Federal/BLM
Reptiles/Amphibians		
Desert tortoise	***Gopherus agassizii***	**ST/FT**
Couch's spadefoot toad	*Scaphiopus couchii*	CSC/__/BLM Sensitive
Mojave fringe-toed lizard	***Uma scoparia***	**CSC/__/BLM Sensitive**
Desert rosy boa	*Charina (Lichanura) trivirgata*	__/__/__
Birds		
Western burrowing owl	***Athene cunicularia hypugaea***	**CSC/BCC/BLM Sensitive**
Golden eagle	***Aquila chrysaetos***	**CFP/BCC/BLM Sensitive**
Short-eared owl	*Asio flammeus*	CSC/__/__
Ferruginous hawk	*Buteo regalis*	WL/BCC/BLM Sensitive
Swainson's hawk	***Buteo swainsoni***	**ST**/__/__
Vaux's swift	***Chaetura vauxi***	**CSC**/__/__
Mountain plover	*Charadrius montanus*	CSC/__/BLM Sensitive
Northern harrier	***Circus cyaneus***	**CSC**/__/__
Gilded flicker	*Colaptes chrysoides*	SE/BCC/__
Yellow warbler	***Dendroica petechia sonorana***	**CSC/BCC/**__
Prairie falcon	***Falco mexicanus***	**WL/BCC/**__
American peregrine falcon	***Falco peregrinus anatum***	**CFP/BCC**/__
California horned lark	***Eremophila alpestris actia***	**WL**/__/__
Yellow-breasted chat	*Icteria virens*	CSC/__/__
Loggerhead shrike	***Lanius ludovicianus***	**CSC/__/BCC**
Gila woodpecker	*Melanerpes uropygialis*	SE/BCC/__
Black-tailed gnatcatcher	***Polioptila melanura***	__/__/__
Purple martin	*Progne subis*	CSC/__/__
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC/__/__
Brewer's sparrow	***Spizella breweri***	**__/BCC/__**
Bendire's thrasher	*Toxostoma bendirei*	CSC/BCC/BLM Sensitive
Crissal thrasher	*Toxostoma crissale*	CSC/__/__
Le Conte's thrasher	***Toxostoma lecontei***	**__/BCC/__**
Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__ /BLM Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/BLM Sensitive
Burro	***Equus asinus***	__/__/__
Spotted bat	*Euderma maculatum*	CSC/__/ BLM Sensitive
Western mastiff bat	*Eumops perotis californicus*	CSC/__/ BLM Sensitive
Hoary bat	*Lasiurus cinereus*	__/__/__
California leaf-nosed bat	*Macrotus californicus*	CSC/__/ BLM Sensitive
Arizona myotis	*Myotis occultus*	CSC/__/__
Cave myotis	*Myotis velifer*	CSC/__/ BLM Sensitive

TABLE 3.4-1 (Continued)
SPECIAL-STATUS WILDLIFE KNOWN TO OR WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Common Name	Scientific Name	Status State/Federal
Mammals (cont.)		
Yuma myotis	*Myotis yumanensis*	__/__/BLM Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__/__
Pocket free-tailed bat	*Nyctinomops femorosaccus*	CSC/__/__
Big free-tailed bat	*Nyctinomops macrotis*	CSC/__/__
Burro deer[a]	*Odocoileus hemionus eremicus*	__/__/__
Nelson's bighorn sheep	*Ovis canadensis nelson*	__/__/BLM Sensitive
Yuma mountain lion	***Puma concolor browni***	**CSC**/__/__
American badger	***Taxidea taxus***	**CSC**/__/__
Desert kit fox	***Vulpes macrotis arsipus***	__/__/__

NOTES:

[a] Species highlighted in **bold-face type** were identified during surveys of the study area.

Status codes:

Federal

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities

State

SE = State listed as endangered
ST = State listed as threatened
CSC = California Species of Special Concern. Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction
CFP = California Fully Protected Species
WL = State watch list

Bureau of Land Management

BLM Sensitive = = Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840. http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf

SOURCE: CNDDB, 2011; Tetra Tech EC, Inc. and Karl, 2011a; 2011b; Tetra Tech EC, Inc., 2011

Desert Tortoise

Natural History

The desert tortoise was state-listed in California as threatened on August 3, 1989. The Mojave population was federally listed as threatened on April 2, 1990, and critical habitat was designated on February 8, 1994. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California (USFWS, 2011a). The desert tortoise's range, outside the listed Mojave population, extends into the Sonoran Desert, where tortoises occur in the lower Colorado River Valley, Arizona uplands, plains of Sonora, and the central Gulf Coast; the species has not been documented in northeastern Baja California (USFWS, 2011a) (Figures 3.4-1 and 3.4-2).

Desert tortoises are well adapted to living in a highly variable and often harsh desert environment. They spend much of their lives in burrows, even during their seasons of activity, which generally coincides with the greatest annual forage availability. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. Activity does decrease in summer, but tortoises often emerge after summer rain storms (Henen et al., 1998; USFWS, 2011a). During activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (USFWS, 2011a). During periods of inactivity, they reduce their metabolism and water loss and consume very little food. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets (Nagy and Medica, 1986 as cited in CEC, 2010; USFWS, 2011a).

The size of desert tortoise home ranges varies with respect to location and year (Berry, 1986 as cited in CEC, 2010) and also serves as an indicator of resource availability and opportunity for reproduction and social interactions (USFWS, 2011a). Females have long-term home ranges that may be as little or less than half that of the average male, which can range to up to 200 acres. Core areas used within tortoises' larger home ranges depend on the number of burrows used within those areas (Harless et al., 2009 as cited in CEC, 2010). Over its lifetime, each desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of more than 7 miles at a time (Berry, 1986 as cited in CEC, 2010).

Tortoises are long-lived and grow slowly, requiring 13 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner et al., 1984a as cited in CEC, 2010; USFWS, 2011a). Mating occurs during spring, summer, and fall (Black, 1976; USFWS, 2011a), and the number of eggs as well as the number of clutches (set of eggs laid at a single time) that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (USFWS, 2011a). Egg-laying occurs primarily from April to July (USFWS 2011a); the female typically lays 2 to 14 eggs (average 5 to 6 eggs) in an earthen chamber excavated near the mouth of a burrow or under a bush (Woodbury and Hardy, 1948 as cited in CEC, 2010; USFWS 2011a). The eggs typically hatch 90 to 120 days later, between August and October. The success rate of clutches has proven difficult to measure, but predation appears to play an important role in clutch failure (Boarman, 1993).

The majority of threats to the desert tortoise and its habitat are associated with human land uses. Many of those that formed the basis for listing the species as threatened continue to affect the tortoise today (USFWS, 2011a). Some of the continued threats to desert tortoise populations include urbanization, upper respiratory tract disease and possibly other diseases, predation by common ravens and domestic and feral dogs, unauthorized off-road vehicle activity, authorized vehicle activity, illegal collecting, mortality on paved roads, vandalism, drought, livestock grazing, feral burros, non-native plants, changes to natural fire regimes, and environmental contaminants (USFWS, 2011a).

Although a wide range of threats is known to affect desert tortoises and their habitat, very little is known about these threats' demographic impacts on tortoise populations or the relative contributions each threat makes to tortoise mortality (Boarman, 2002). Extensive research shows that all of these threats can directly kill or indirectly affect tortoises; research has also clarified many mechanisms by which these threats act on individuals. While current research results can lead to predictions about how local tortoise abundance should be affected by the presence of threats, quantitative estimates of the magnitude of these threats, or of their relative importance, have not yet been developed. Thus, the *Revised Recovery Plan* focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations (USFWS, 2011a).

The 1994 *Desert Tortoise (Mojave Population) Recovery Plan* identified six recovery units (Upper Virgin River, Northeastern Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, and Western Mojave) and recommended the establishment of 14 DWMAs throughout the recovery units (USFWS, 1994) (Figure 3.4-2). Since 1994, greater insight into patterns of both ecological and genetic variation within the Mojave desert tortoise population has been gained. The 2011 *Revised Recovery Plan* combined the Eastern Colorado and Northern Colorado recovery areas into the Colorado Desert unit to reflect newly obtained information (USFWS, 2011a).

Within the Colorado Desert Recovery Unit where the Project is located, desert tortoise are found primarily in "the valleys, on bajadas, desert pavements, rocky slopes, and in the broad, well-developed washes (especially to the south)" (USFWS, 2011a). Habitat within this recovery unit has been described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS, 2006a). The highest desert tortoise densities within this recovery unit occur in Chemehuevi and Ward valleys approximately 60 miles north of the Project site, on the Chuckwalla Bench within the Chuckwalla DWMA and the associated Chuckwalla critical habitat unit for desert tortoise approximately 50 miles west of the Project site, and in Joshua Tree National Park approximately 40 miles northwest of the Project site (Figure 3.4-2). Desert tortoise densities at the Chuckwalla Bench from 1979 to 1996 were among the highest of California survey plots, though have shown declining trends (Berry, 1997; Tracy et al., 2004).

The 1994 Recovery Plan estimated tortoise densities in the Eastern Colorado Recovery Unit between 5 and 175 adult tortoises per square mile (USFWS, 1994); however, density estimates from 2001 to 2005 (USFWS, 2006b) were lower than estimates from earlier studies (USFWS, 2011a). Differences may reflect a difference in scale between survey methods; however, low tortoise densities across recovery units in later years may also represent continued decline of populations throughout the Mojave Desert since the species was listed (USFWS, 2006b; 2011a). The 2006 Recovery Plan indicated a threat level of 4 out of 5 (5 = extremely high) for tortoises within the Recovery Unit. A threat designation was not made in the 2011 Recovery Plan.

Survey Methods and Results

As part of the application process, the Applicant evaluated the availability and quality of desert tortoise habitat in the study area based on direction provided by the USFWS (Engelhard, 2011 as cited in Tetra Tech EC, Inc. and Karl, 2011a). Survey methods for the desert tortoise generally followed the USFWS survey protocol and included the 4,437-acre solar plant site at 100 percent survey ground coverage (30-foot wide transects), with three additional 30-foot-wide buffer transects at 500 feet (152 meters), 1,310 feet (400 meters), and 1,970 feet (600 meters) from the site (except south of the site where the BSPP was under construction).[1] The 1,733-acre potential tortoise translocation area located immediately west of the Project site was also surveyed at 100 percent coverage. The 146-acre disturbance area for linear corridors was surveyed at 100 percent coverage, with three additional 30-foot-wide buffer transects at 655 feet (200 meters), 1,310 feet, and 1,970 feet.

Protocol-level surveys of the Project disturbance area and buffer areas were conducted from April 7 through April 21, 2011 (Tetra Tech EC, Inc. and Karl, 2011a). Additional focused desert tortoise surveys were performed on the solar plant site portions of the gen-tie line, and areas north of the CRS site in September 2011 (Tetra Tech EC, Inc. and Karl, 2011b). Spring 2011 surveys of the Project site included 2 adult desert tortoise (one of the solar plant site and on the linear corridor), 30 tortoise carcasses, 7 scat, 24 known or potential burrows, and 220 tortoise shell fragments or fragment groups (Table 3.4-2) (Tetra Tech EC, Inc. and Karl, 2011a). Fall 2011 surveys detected additional tortoise sign (tracks, recent scat, and active burrows) in portions of the solar plant site and gen-tie line and access road route (Tetra Tech EC, Inc. and Karl, 2011b). No desert tortoises were observed during buffer area surveys, though three tortoises were observed in the potential translocation area each about 0.25-mile west of the Project site (Tetra Tech EC, Inc. and Karl, 2011a; 2011b).

TABLE 3.4-2
SUMMARY OF DESERT TORTOISE SIGN IN THE PROJECT STUDY AREA

	Number of Observations				
Tortoise Sign Type	**Solar Plant Site**	**Gen-tie Line**	**Within 600 Meters of Solar Plant Site and Gen-tie Line**	**Potential Translocation Area**	**Total**
Individual	1	1	0	3	5
Burrow	3	2	0	18	23
Potential Burrow	6	0	1	13	20
Scat (not associated with burrow)	7	0	0	14	21
Carcass < 4 years old	1	0	1	8	10
Carcass > 4 years old	23	0	0[a]	17[a]	40
Shell Fragment < 4 years old	2	0	1	1	4
Shell Fragment > 4 years old	160	0	12	19	191
Permineralized Shell Fragment	36	1	13	0	50

[a] Three carcasses in the potential translocation area were identified within 600 m of the Project site

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a; 2011b

1 Note that the 600-foot (200-meter) survey transect was replaced by a 500-foot transect, thus, the protocol deviated somewhat from the standard USFWS desert tortoise survey protocol.

Tortoise sign was strongly associated with vegetated, incised drainages on the west portion of the Project site. Other portions of the Project site did not show evidence of current or past tortoise inhabitation (i.e., no scat, burrows, or tortoises were detected), supporting the observation that tortoise use of the site is patchy and that not all potentially suitable habitat is occupied. Following surveys, two methods were used to estimate density on the Project site. The first used the USFWS (2010) protocol that estimates density based on the number of live tortoises observed. This method yielded a population estimate of 1.8 adult tortoises (range: 0.33 to 9.65), which is equivalent to 0.2 adult tortoises per square mile (Tetra Tech EC, Inc. and Karl, 2011a).

An alternative method was also used to estimate density based on the type and distribution of sign, taking into account tortoise home range sizes. Recent tortoise sign (scat and burrows) on the site was grouped into two areas of relatively low concentrations in the northwestern portion of the Project site. One group was associated with a single observed tortoise; the second concentration consisted of adult-sized burrows. Using a 1,980-foot (600-meter) home range radius generates an estimate of two tortoises on the solar plant site, or 0.2 adult tortoises per square mile, which is comparable to the USFWS protocol estimate (Tetra Tech EC, Inc. and Karl, 2011a).

These low densities and uneven use of the Project site, with nearly all use concentrated in the western portion of the Project site and west to the mountains, are consistent with the results from the BSPP surveys in 2009 and 2010 (AECOM, 2010a as cited in CEC, 2010). The BSPP surveys found only three adult tortoises in one year of surveys and four in the next year. Tortoise sign indicating use (i.e., burrows, scat, and tortoises) was noted in the western portion of the BSPP site and areas further west near the McCoy Mountains. The area between the McCoy Mountains and the Project site and BSPP sites forms a continuous corridor of occupied habitat that links tortoise populations north of the Project site to those south of the site.

There are 4,437 acres of suitable desert tortoise habitat on the solar plant site, including 2,259 for Unit 1 and 2,178 for Unit 2 (Tetra Tech EC, Inc. and Karl, 2012b). Because areas south of I-10 are sandier and provide less favorable habitat for tortoises (Tetra Tech EC, Inc. and Karl, 2011a), of the 146 acres of off-site disturbance areas associated with the gen-tie line, and switchyard, 105.7 acres provide habitat for desert tortoise (Tetra Tech EC, Inc. and Karl, 2012b). The total area of desert tortoise habitat in the Project disturbance area is 4,496 acres.

Mojave Fringe-toed Lizard

Natural History

Mojave fringe-toed lizards are widespread geographically across the Mojave and northern Colorado deserts, occurring primarily in San Bernardino, eastern Riverside, and southeastern Inyo counties (Figures 3.4-3 and 3.4-4). Their distribution is naturally fragmented because of their obligate habitat specificity to loose sand, a patchy habitat type (Murphy et al., 2006 as cited in CEC, 2010). Many local populations of this species are quite small, with small patches of sand supporting small populations of lizards. This fragmented pattern of distribution leaves the species vulnerable to local extirpations from additional habitat disturbance and fragmentation (Murphy et al., 2006 as cited in CEC, 2010). The loose wind-blown sand habitat upon which the species is dependent is a fragile ecosystem requiring the protection against both direct and indirect disturbances (Griffiths et al., 2002; Barrows, 1996 as cited in CEC, 2010).

Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will also affect this species (Turner et al., 1984b as cited in CEC, 2010; Jennings and Hayes, 1994). Additional threats to this species include habitat loss or damage from urban development, off-highway vehicles (OHVs), and agriculture. Aside from the direct loss of land, development can also increase predators, such as the common raven, in Mojave fringe-toed lizard-occupied habitat. The BLM allows intensive OHV use over a majority of the species' range in California and Arizona. The restricted range of this species and intensive uses of habitat both contributed to its characterization as a BLM sensitive species.

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range (Norris, 1958 as cited in CEC, 2010; Jennings and Hayes, 1994). This species is totally restricted to habitats of fine, loose aeolian sand, typically with sand grain size no coarser than 0.375 mm in diameter (Turner et al., 1984b as cited in CEC, 2010; Jennings and Hayes, 1994; Stebbins, 1944 as cited in CEC, 2010). They burrow in the sand for both cover from predators and protection from undesirable temperatures (Stebbins, 1944 as cited in CEC, 2010), though they will also seek shelter in rodent burrows. They are primarily insectivorous, but also eat plant food including leaves, seeds, and buds (Stebbins, 1944 as cited in CEC, 2010; USFWS, 2011b).

Mojave fringe-toed lizards normally hibernate from November to February, emerging from hibernation sites from March to April. The breeding season is April to July, and adult Mojave fringe-toed lizards reach sexual maturity two summers after hatching (Jennings and Hayes, 1994; USFWS, 2011b). From April to May, while temperatures are relatively cool, this species is active during mid-day; from May to September, they are active in mornings and late afternoon, but seek cover during the hottest parts of the day. Common predators of the Mojave fringe-toed lizard include burrowing owls, leopard lizards, badgers, loggerhead shrikes, roadrunners, various snakes, and coyotes (Jennings and Hayes, 1994).

Survey Results

There are no formal survey protocols for Mojave fringe-toed lizards; therefore, surveys were conducted concurrently with desert tortoise surveys from April 7 through April 21, 2011, with incidental observations also recorded during fall 2011 botanical surveys. Surveys were conducted when temperatures were sufficiently warm to detect lizards during a period when lizards were active. Survey intensity was sufficient to document the presence of Mojave fringe-toed lizards within suitable habitat, as well as document the boundaries of Mojave fringe-toed lizard habitat.

Mojave fringe-toed lizards are loose-sand specialists, found only in aeolian sand dunes, sand fields, hummocks, and other areas with loose sand deposits, between 300 and 3,000 feet in elevation (Stebbins, 2003). The sand dunes on the gen-tie line route south of I-10 provide the only suitable Mojave fringe-toed lizard habitat in the Project Area, with no suitable habitat north of the I-10 or at the solar plant site. Biologists observed 75 occurrences of one to several Mojave fringe-toed lizards in spring 2011 and 188 additional lizards in fall 2011 during surveys, and sand dune and sand sheet habitat along a 4-mile portion of the gen-tie line route south of I-10 during spring 2011 surveys (Tetra Tech EC, Inc. and Karl, 2011a; 2012b).

Couch's Spadefoot Toad

Natural History

Couch's spadefoot toads are found in southeastern California east through Arizona, New Mexico, Texas, and Oklahoma, south to San Luis Potosi, Nayarit, Mexico, at the southern tip of Baja California, Mexico, and as an isolated population in Colorado. In California, they are found in the extreme southeast, including southeastern San Bernardino County and eastern Riverside and Imperial Counties (Jennings and Hayes, 1994) (Figure 3.4-5).

Couch's spadefoot toads are found in a variety of plant communities, including desert dry wash woodland, creosote bush scrub, and alkali sink scrub. They require habitat with substrate capable of sustaining temporary pools for breeding, and loose enough to permit burial in subterranean burrows (Jennings and Hayes, 1994; BLM, 2002). Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas. The majority of known Couch's spadefoot toad breeding ponds are artificial, though this may be because of the difficulty of locating natural ponds within the limited amount of time ponds may retain water. Couch's spadefoot toads' food source consists primarily of alate termites, but also includes beetles, ants, grasshoppers, spiders, and crickets.

This species is dormant from 8 to 10 months of the year, emerging from burrows at the onset of warm summer rains. Emergence appears to be triggered by the low-frequency sound caused by falling rain, though it appears to be inhibited by low soil temperatures.

Threats to Couch's spadefoot toads include loss of habitat from urbanization and agriculture and impacts from OHVs, which can destroy potential pool habitat. There are also indications that the low-frequency sound created by OHVs may trigger emergence cues, and result in emergence in poor environmental conditions (Jennings and Hayes, 1994).

Survey Results

No Couch's spadefoot toads were observed during surveys in spring 2011; however, surveys were conducted outside the proper identification season for this species, which is after summer rains, so biologists conducting the surveys recorded and mapped potential breeding habitat based on evidence of ponding or inundation, vegetation, microtopography, and soil composition. Potential breeding habitat was detected at seven swales on the gen-tie line and access road route and one location in the southwest portion of the solar plant site. High-quality breeding habitat was found at the borrow pit and graded depression north of I-10. During sufficient rain events, these areas may collect water both from runoff from the McCoy Mountains and direct precipitation.

Local breeding records for this species include sites near the intersection of I-10 and Wiley's Well Road about 8 miles from the CRS site; another near I-10 and State Route 78 about 6 miles from the substation site; and another approximately 9 miles north of the Project site on the

Blythe-Midland Road. The nearest CNDDB records include two from Imperial County (1989 and 2002) that are between 12 and 17 miles south of the Project area (CNDDB, 2011). The Project is within the geographic range for this species as described in the NECO Plan (BLM, 2002) and Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes, 1994).

Additional surveys were performed in summer/fall 2011 and 2012 in response to several storms that could have resulted in ponding. In summer/fall 2011, precipitation was not sufficient to result in enough ponding to initiate spadefoot breeding, and no adult spadefoot toads or evidence of larvae or eggs was observed. In summer/fall 2012, four of the seven survey locations contained sufficient ponding to support spadefoot breeding, but no adults, tadpoles, or eggs were observed. A technical memorandum summarizing the results of these breeding seasons surveys noted that two adult spadefoot toads were observed approximately 2 miles from a survey location near I-10 and Palen Dunes Drive, a minimum of 7 miles west of the substation site (Tetra Tech EC, Inc., 2012a).

Western Burrowing Owl

Natural History

Western burrowing owls inhabit arid lands throughout much of the western United States and southern interior of western Canada and are typically year-round residents in much of California (Gervais et al., 2008). They are protected under the MBTA in the United States, Canada, and Mexico.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by California ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al., 2008). The southern California breeding season, defined as from pair bonding to fledging, is from February to August, with a peak of breeding activity from April through July.

In the Colorado Desert, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant, including along the lower Colorado River (Gervais et al., 2008) (Figure 3.4-6). Burrowing owls tend to be opportunistic feeders. Their diet consists primarily of large arthropods, mainly including beetles and grasshoppers. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), are also important food items for this species. Other prey animals include reptiles and amphibians, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. Consumption of insects increases during the breeding season.

Threats to burrowing owls include habitat modification and destruction of ground squirrel burrows. Other threats include pesticide accumulation, burrow destruction from farming practices and canal and road maintenance, roadside shooting, and direct mortality from squirrel poisons (BLM, 2002; Gervais et al., 2008).

Survey Results

Based on survey findings, the entire Project disturbance area (approximately 4,500 acres) is considered to provide potentially suitable burrowing owl nesting and foraging habitat. Three phase protocol-level burrowing owl surveys were performed from 2007 to 2011 consistent with the current CDFG survey standard, which is the California Burrowing Owl Consortium (CBOC) Guidelines (CBOC, 1993).

Within the study area, 14 recently active owl burrows, two burrowing owl pairs, and four individual owls were observed on the solar plant site. Four additional owls were detected in the study area west of the solar plant site boundary. One owl pair and one active burrow also were noted on the gen-tie line and access road route north of I-10 (Tetra Tech EC, Inc. and Karl, 2011a; 2011b).

Golden Eagle

Natural History

Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity March through July (Kochert et al., 2002). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. This species is generally considered to be more common in southern California than in the northern part of the state (U.S. Forest Service [USFS], 2008).

Habitats for this species typically include rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al., 2002). This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover (Figures 3.4-7 and 3.4-8).

The status of golden eagle populations in the United States is not well known, although there are indications that populations may be in decline (USFWS, 2009; Kochert et al., 2002). Accidental death from collision with man-made structures, electrocution, gunshot, and poisoning are the leading causes of mortality for this species, and loss and degradation of habitat from agriculture, development, and wildfire continues to put pressure on golden eagle populations (Kochert et al., 2002; USFWS, 2009).

Absent interference from humans, golden eagle breeding density is determined by either prey density or nest site availability, depending upon which is more limiting (USFWS, 2009). A compilation in Kochert (2002) of breeding season home ranges from several western United States studies showed an average home range of 20 to 33 square kilometers (7.7 to 12.7 square miles) that ranged from 1.9 to 83.3 square kilometers (0.7 to 32.2 square miles). In San Diego, a study of 27 nesting pairs found breeding season home ranges to be an average of 36 square miles with a range from 19 to 59 square miles (Dixon, 1937 as cited in CEC, 2010). Other studies from within and outside the United States include home ranges from 9 to 74.2 square miles (McGahan, 1968 as cited in CEC, 2010; Watson et al., 1992 as cited in CEC, 2010), though golden eagles in the Mojave Desert are believed to have somewhat larger ranges due to low prey densities. In 2009, the USFWS published a Final Eagle Permit Rule authorizing limited issuance of permits to take bald and golden eagles where the take is associated with but not the purpose of an otherwise lawful activity (74 Fed. Reg. 46836, September 11, 2009).

Survey Results

In spring 2010 and 2011, the Applicant along with applicants of other adjacent proposed solar development projects jointly funded golden eagle helicopter surveys to detect golden eagle nesting activity, in accordance with the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al., 2010). The 2010 helicopter survey was a collaborative effort among three solar developers for four proposed projects located north of I-10 between the town of Desert Center and Blythe. The survey coverage included an approximate 10-mile survey buffer from each project's ROW boundary. One of the projects was the BSPP directly south of the Project, and therefore, surveys also covered the entire Project and portions of its 10-mile buffer.

At the request of the USFWS and to provide a second consecutive year of golden eagle nest data within 10 miles of the solar plant site boundary, aerial surveys were conducted on March 23 and 24 (Phase 1), and May 5, 6, and 7, 2011 (Phase 2). These survey periods coincided with the most appropriate time to observe nesting activity and productivity, and focused on areas containing suitable nesting habitat within the search area. The Wildlife Research Institute (WRI) conducted the surveys following the USFWS protocols (Pagel et al., 2010), and covered approximately 314 square miles.

The spring 2010 helicopter surveys detected two golden eagle nests (one active and one inactive) within 10 miles of the Project boundary, and five additional nests were detected in 2011. For 2010, the active eagle nest was located 9.2 miles northeast of the Project boundary, and the inactive (and nearest) nest was 2.3 miles southwest of the Project boundary. The 2011 nest survey located five golden eagle nests within the 10-mile search radius; though no golden eagles were observed during the surveys (Tetra Tech EC, Inc., 2011). The inactive golden eagle nests were observed approximately 1.7 miles west, 3 miles southwest, 5.6 miles west-northwest, and 8.4 miles northwest of the Project in the McCoy Mountains. An additional 11 inactive golden eagle nests were detected outside the 10-mile search radius, at distances of 10.5 to 13.5 miles from the Project boundary.

Based on the distribution and evaluation of nests, WRI concluded that nests observed in 2011 represented eight inactive golden eagle territories[2], four of which were within and four of which were outside of the 10-mile search radius. Surveyors considered it likely that portions of the foraging areas of other eagle territories overlapped the 10 mile search area (Tetra Tech EC, Inc. and Karl, 2011a). No successful breeding by golden eagles was detected within any of the

2 Golden eagle breeding territories or "territories" refer to the portion an individual eagle's home range this is actively defended against others of the same sex or species.

territories within or outside the 10-mile search radius on either phase of the aerial survey (Tetra Tech EC, Inc. and Karl, 2011a; Tetra Tech EC, Inc., 2011).

In addition to helicopter survey results, two golden eagles were incidentally observed flying overhead south of the solar plant site during wildlife surveys in spring 2011. No eagles were observed during focused avian point counts in 2011 (Tetra Tech EC, Inc. and Karl, 2011a).

Loggerhead Shrike

Natural History

Loggerhead shrikes are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California they are generally much more common in interior desert regions than along the coast (Humple, 2008). Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef, 1996).

This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef, 1996). Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple, 2008).

Survey Results

The entire 4,500-acre Project site contains suitable habitat for loggerhead shrike, as this was the fifth most common bird species (39 sightings) observed during avian point count surveys. Loggerhead shrikes were observed in eight of the 12 survey locations during spring and fall 2011 surveys (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). Loggerhead shrikes are year-round residents of the region (Yosef, 1996) and were observed nesting in ironwood and palo verde trees in the study area. The entire Project site is loggerhead shrike habitat because of the open and relatively low shrub vegetation that also contains taller structures that are used for nesting and as lookout posts to spot potential predators and prey.

Le Conte's Thrasher

Natural History

In California, Le Conte's thrashers are resident in the San Joaquin Valley and the Mojave and Colorado deserts (Figure 3.4-9). They occur in desert flats, washes, and alluvial fans with sandy and/or alkaline soil and scattered shrubs. They rarely occur in monotypic creosote scrub habitat, because creosote bush is unable to support a nest, or in massive Sonoran Desert woodlands (BLM, 2005). Preferred nest substrate includes thorny shrubs and small desert trees. Breeding activity occurs from January to early June, with a peak from mid-March to mid-April (BLM, 2002). Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders.

Survey Results

Le Conte's thrashers were observed throughout the solar plant site during spring and fall 2011 surveys. Five adult birds and one active nest were identified on the site (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). The entire 4,500-acre Project site is Le Conte's thrasher habitat, providing cholla and low shrubs for cover and dense, spiny wash vegetation for nesting.

Black-tailed Gnatcatcher

Natural History

Black-tailed gnatcatchers are year-round residents in southwestern United States and central and northern Mexico; in California they are found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Monument south, and along the Colorado River. They are now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season.

Survey Results

Black-tailed gnatcatchers were observed on 11 instances during point count surveys on the solar plant site and gen-tie line, occurring predominantly in association with vegetated areas dominated by creosote bush scrub/desert dry wash woodland (Tetra Tech EC, Inc. and Karl, 2011a).

California Horned Lark

Natural History

California horned larks are found throughout California except the north coast, and are less common in mountainous areas. This species prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas. Eggs are laid March to early June, and this species frequently lays a second clutch.

Survey Results

The Project site contains suitable habitat for the California horned lark, especially in creosote bush scrub habitat, which is the dominant vegetation community on the solar plant site. This species was the most frequently detected bird as it was observed during 50 percent of all surveys (Tetra Tech EC, Inc. and Karl, 2011a).

American Badger

Natural History

American badgers were once fairly widespread throughout open grassland habitats of California. Badgers are an uncommon permanent resident with a wide distribution across California, except from the North Coast area. Badgers inhabit burrows and often predate and forage on other small mammal burrows as evidenced by claw marks along the edges of existing burrows. This species is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner et al., 1990a). Badgers feed mainly on various species of small mammals and capture some of their prey above ground, foraging on birds, eggs, reptiles, invertebrates, and carrion. Most of the CNDDB records from the Palo Verde Valley area of Riverside County are prior to 1960 and the closest to the Project site is a 1915 record from the Little Chuckwalla Mountains approximately 7 miles southwest of the CRS (CNDDB, 2011).

Survey Results

The entire study area is considered suitable habitat for badgers (Figure 3.4-10) and badger sign was detected during field surveys. Biologists observed one badger approximately 0.35 mile west of the gen-tie line and access road route north of the I-10 in the McCoy Mountains, as well as six badger digs on the solar plant site and one dig at the CRS (Tetra Tech EC, Inc. and Karl, 2011a). The badger is a resident of a wide variety of habitats, including level, open areas in grasslands, agricultural areas, and open shrub habitats. Suitable habitat for the American badger occurs throughout the Project disturbance area.

Desert Kit Fox

Natural History

Desert kit fox are an uncommon to rare permanent resident of arid regions of the southern portion of California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox occur in association with their prey base which is primarily cottontail rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, or birds (Zeiner et al., 1990b). Protection provided by kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of the species. Title 14 CCR §460 identifies the desert kit fox as non-game species that may not be hunted or captured.

Survey Results

Desert kit fox burrows, complexes, and scat were observed throughout the Project disturbance area and the entire study area is considered habitat for this species (Figure 3.4-10). Surveyors detected 57 kit fox natal dens during spring 2011 surveys, of which 34 were within the solar plant site and 8 were along the gen-tie line and access road route; the rest were observed outside of the disturbance area. Of the 42 natal dens in the Project disturbance area, 12 of 15 active sites were on the solar plant site. Suitable prey base (wood rats, pocket mice, ground squirrels, cottontail rabbits) and habitat to support this species occur throughout much of the undeveloped portions of the Project site.

Nelson's Bighorn Sheep

Natural History

Nelson's desert bighorn sheep is a BLM California Sensitive Species, a State Fully Protected Species, and a State Game Species (BLM, 2002). The Nelson's bighorn sheep includes bighorns from the Transverse Ranges through most of the desert mountain ranges of California and adjacent Nevada and northern Arizona to Utah. Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains, termed “escape terrain.” Their agility on steep rocky terrain is an adaptation used to escape predators such as coyotes, eagles, and cougars (Wehausen, 1992 as cited in CEC, 2010). Surface water is another element of desert bighorn habitat considered essential to population health. Male and female bighorn sheep inhabiting desert ecosystems can survive without consuming surface water (Krausman et al., 1985 as cited in CEC, 2010), and males appear to drink infrequently in many situations; however, there are no known large populations of bighorn sheep in the desert region that lack access to surface water. In the spring, when annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage. Desert bighorn sheep have a long lambing season that can begin in December and end in June in the Mojave Desert, and a small percentage of births commonly occur in summer as well (Wehausen, 1992 as cited in CEC, 2010).

Over the past 140 years, bighorn sheep have suffered considerable population declines throughout their range, and metapopulations have been fragmented by roads and other barriers with a resulting decline in genetic diversity (Bleich et al., 1996 as cited in CEC, 2010). Disease, sometimes brought about by contacts with domestic sheep, drought, and predation, interacting with other anthropogenic factors, may also have contributed to declines in bighorn sheep populations (BLM, 2005). Loss of surface water sources may also diminish the viability of existing populations (BLM, 2005).

Two metapopulations of bighorn sheep occur within the NECO planning area, the Southern Mojave and Sonoran (Figure 3.4-11). Within these metapopulations, there are smaller, somewhat isolated subpopulations of bighorn sheep known as demes (BLM, 2002). The NECO Plan addresses the conservation of the bighorn sheep through the designation of Bighorn Sheep WHMAs, which overlay the entire range of their occurrence and movement corridors. At its nearest point, the solar plant site is located approximately 0.5 mile from the boundary of a bighorn sheep WHMA (Figure 4 in Tetra Tech EC, Inc. and Karl 2011a). The gen-tie line and access road route does not overlap any special management areas, except at the interconnection to the switchyard, where it overlaps the Mule Mountains Multiple-species WHMA. The switchyard is located entirely within the Mule Mountains Multiple-species WHMA.

The NECO Plan shows the McCoy Mountains and the Little Maria Mountains as unoccupied ranges; however, three ewes were observed more than 10 miles north of the solar plant site in the Little Maria Mountains during golden eagle helicopter surveys. No bighorn sheep were observed in the McCoy Mountains during helicopter surveys; however, sheep occur in the ranges adjacent to the McCoy Mountains and have the ability to naturally recolonize that range in the future.

Sheep are difficult to detect in ranges with a very low number of individuals such as the McCoy Mountains. The McCoy mountain range has been determined to be an important area for sheep recovery and is designated as a desert bighorn sheep WHMA within BLM.

Sheep are capable of crossing large expanses of lands between mountain ranges. For example, five Peninsular bighorn sheep ewes were documented on the Imperial Valley Solar 2 site, which is approximately 7 miles from the nearest mountain range. Telemetry data have documented animals traveling across the flats approximately 10 to 12 miles between the Old Dad's and Marble Mountains (Rodriguez, 2010 as cited in CEC, 2010).

Survey Results

No sign or evidence of Nelson's bighorn sheep was found within the study area during field surveys; however, potential sign was observed in the adjacent BSPP site in 2009 (Tetra Tech EC, Inc. and Karl, 2011a; CEC, 2010). The study area is not within a known bighorn sheep movement corridor.

Burro Deer

Natural History

Burro deer is a subspecies of mule deer (*Odocoileus hemionus*) found in the Colorado region of the Sonoran Desert both near the Colorado River and substantially away from the river, especially associated with arboreal washes (Figure 3.4-12). This species is found in the Colorado region of the Sonoran Desert near the Colorado River and within desert dry wash woodland communities. Some burro deer are resident along the Colorado River, but a significant portion move into desert areas in response to water and forage. During the hot summers, water is critical, and burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where the microphyll (small-leaved) woodland is dense and provides good forage and cover. With late summer thundershowers and cooler temperatures, deer move away from the Colorado River and Coachella Canal and then up the larger washes into mountains or wash complexes in the foothills (BLM, 2002). Burro deer are a big game species managed by CDFG.

Survey Results

Biologists found a partial hide of a burro deer on the solar plant site, indicating that burro deer occur in the area. No other sign was observed (Tetra Tech EC, Inc. and Karl, 2011a). There is suitable habitat for the burro deer on the solar plant site, and suitable habitat within the larger washes that would be crossed by the gen-tie line and access road route north of I-10. Suitable habitat is also present to the east in McCoy Wash and near the Colorado River.

Pallid Bat

Natural History

The pallid bat (*Antrozous pallidus*) is a California species of concern and a BLM Sensitive species indicating it is covered under the NECO Plan. Pallid bats inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyon lands, and shrub/steppe grasslands, but also occur in higher-elevation coniferous forests, greater than 7,000 feet in elevation. This species is most abundant in xeric landscapes including the Great Basin, Sonoran, and Mojave Deserts (WBWG, 2009). Pallid bats are known from Cuba, Mexico, and throughout the southwestern and western United States. Population trends are not well known, but there are indications of decline. Pallid bats roost alone, in small groups (two to 20 bats), or gregariously (hundreds of individuals). Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees with exfoliating bark, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied or vacant buildings (WBWG, 2009).

Survey Results

A natural cavity with a small amount of bat guano, but no current use by bats, was detected on the southwest corner of the solar plant site (Tetra Tech EC, Inc. and Karl, 2011a). This cavity may have been used as a pallid bat daytime roost, as they typically use buildings, mines, bridges, rock shelters, or other sites with overhead protection. Based on the presence of suitable habitat, this species has a potential to roost and forage on the site. The nearest CNDDB records are a historical (1919) occurrence approximately 5 miles east of the gen-tie line north of I-10 and a second 1937 observation in the McCoy Mountains about 8 miles northwest of the Project site. All habitats within the Project disturbance area are suitable for foraging, though potential roost sites are limited to the single cavity.

Spotted Bat

Natural History

The spotted bat (*Euderma maculatum*) is known from all the states west of and including Montana, Wyoming, Colorado, New Mexico and Texas. This broadly distributed though uncommon species occurs from southern British Columbia to northern Arizona, Arizona/Utah border, and western Texas from below sea level to 8,100 feet amsl. Spotted bats occur in arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting.

Survey Results

This species has a potential to forage on the entire Project site and possibly roost in the natural cavity the southwest corner of the solar plant site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record is a historical occurrence from 1907 in the Colorado Desert near Mecca (CNDDB, 2011).

Western Mastiff Bat

Natural History

Western mastiff bats (*Eumops perotis californicus*) range from central Mexico across the southwestern United States including parts of California, southern Nevada, Arizona, southern New Mexico, and western Texas. Recent surveys have extended the previously known range to the north in both Arizona with several localities near the Utah border and California. They are found in a variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high-elevation meadows of mixed conifer forests. Surveys in northern Arizona have documented roosts at approximately 3,600 feet elevation and foraging bat species at 7,500 feet (WBWG, 2009).

Survey Results

The entire Project site supports suitable foraging habitat for western mastiff bats, and potential roosting habitat is available in the natural cavity the southwest corner of the solar plant site. There are no CNDDB occurrences within 10 miles of the site.

Big Free-tailed Bat

Natural History

Big free-tailed bats (*Nyctinomops macrotis*) range from most of South America northward to include Mexico, Arizona, New Mexico, southern and western Texas, southern California, southeastern Nevada, southern Utah, and north and western Colorado from generally sea level to 8,000 feet in elevation. They occur in desert shrub, woodlands, and coniferous forests and roost mostly in the crevices of rocks, although they may roost in buildings, caves, and tree cavities.

Survey Results

This species has the potential to forage on the entire Project site and potential roosting habitat is available in the natural cavity the southwest corner of the solar plant site. The nearest reports for this species are from the vicinity of El Centro, 60 miles to the south, and Joshua Tree National Park, 80 miles to the west (CNDDB, 2011).

California Leaf-nosed Bat

Natural History

California leaf-nosed bats (*Macrotus californicus*) occur in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, they are now found primarily in the mountain ranges bordering the Colorado River Basin. In California, the two largest roosts (each sheltering 1,500 bats during winter months) are in mines in extreme southeastern California. This species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM, 2002). Radio-telemetry studies of *Macrotus* in the California desert show that California leaf-nosed bats forage almost exclusively among desert wash vegetation within 6 miles (10 km) of roosts (WBWG, 2009).

Survey Results

A natural cavity with a small amount of bat guano, but no current use by bats, was detected on the southwest corner of the solar plant site (Tetra Tech EC, Inc. and Karl, 2011a). This cavity may have been used as a California leaf-nosed bat daytime roost, as they typically use buildings, mines, bridges, rock shelters, or other sites with overhead protection. Based on the presence of suitable habitat, this species has a potential to roost and forage on the solar plant site. There are several CNDDB records in the vicinity of the Project. The nearest record is approximately 3 miles south of the Project from 1993 from the McCoy Mountains from creosote bush scrub habitat (CNDDB, 2011) where approximately 300 adults were observed roosting (CNDDB, 2011). All habitats within the Project disturbance area are suitable for California leaf-nosed bat foraging; though potential roost sites are limited to the single cavity.

Species Not Expected in the Study Area

Other special-status wildlife species that were not detected during surveys and not expected in the study area are presented in Table 3.4-3.

TABLE 3.4-3
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT SITE

Reptiles/Amphibians		
Desert rosy boa *Charina (=Lichanura) trivirgata*	In California, desert rosy boas are found only in the southern part of the state south of Los Angeles, from the coast to the Mojave and Colorado deserts (Zeiner et al., 1990c; BLM, 2002). They are uncommon throughout their range. Desert rosy boas are found in habitats with moderate to dense vegetation and rocky cover, such as desert canyons, washes, and mountains. They have been found under rocks, in boulder piles and along rock outcrops and vertical canyon walls. Their diet consists of small mammals and birds. Rosy boas are primarily nocturnal, but may be out in the evening or morning in the spring and may appear during the day. The greatest activity occurs in late spring to early or mid-summer. They hibernate in winter. Desert rosy boas are not listed, but are included in the NECO Plan and the Project area is within the range of this species.	There are four CNDDB records of this species from Riverside County, the majority of which are reported from western Riverside County near Cabazon, Lake Matthews, Lake Elsinore, and Hemet areas from disturbed sage scrub habitats with rocky soils and outcroppings. Field surveys noted that the Project site does not contain the preferred substrate for this species, and it is therefore unlikely to occur on site (Tetra Tech EC, Inc. and Karl, 2011a).
Birds		
Bendire's thrasher *Toxostoma bendirei*	Bendire's thrashers are known in California from scattered locations in Kern, Inyo, San Bernardino, and Riverside counties. This species is a summer resident in southeastern California, and arrives at breeding grounds from mid-March through May, and departs by late August. This species favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave. The status of populations of this species is poorly understood, but threats are believed to be loss of habitat due to urbanization, harvesting of yucca and Joshua trees, overgrazing, and off-road vehicle activity. In parts of the range, grazing may increase habitat suitability by increasing the area with scattered junipers.	The desert dry wash vegetation community provides potential habitat for this species, although this species was not observed during surveys. There are no CNDDB (2011) records within 15 miles of the Project site.
Crissal thrasher *Toxostoma crissale*	Crissal thrashers are non-migratory residents ranging from southern Nevada and southeastern California to western Texas and central Mexico. This species prefers habitats characterized by dense, low, scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush. Nests of this species typically consist of an open cup of twigs, lined with finer vegetation, and are placed in the middle of a dense shrub.	Based on a review of the vegetation community descriptions provided by the Applicant, the Project site does not contain suitable dense scrub habitat preferred by this species. They are known from the area, including from McCoy Spring, Palen Valley, and Chuckwalla Well (Fitton, 2008). The nearest occurrences based on the CNDDB (2011) are two historical records about 6 to 7 miles east of the gen-tie line and access road route on- and south of I-10 (from 1917 and 1919) and a 1977 record approximately 7 miles west of the CRS and south of I-10.
Ferruginous hawk *Buteo regalis*	Ferruginous hawks do not breed in California, but are winter residents and in California are most common in grassland and agricultural areas in the southwest. Ferruginous hawks are found in open terrain from grasslands to deserts, and are usually associated with concentrations of small mammals. Threats to this species include loss of wintering habitat from urbanization and cultivation.	The Project site contains suitable wintering habitat for this species. No ferruginous hawks were observed during Project surveys (Tetra Tech EC, Inc. and Karl, 2011a). There are four ferruginous hawk records within 50 miles of the Project site (CNDDB, 2011).

TABLE 3.4-3 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT SITE

Birds (cont.)		
Gila woodpecker *Melanerpes uropygialis*	The Gila woodpecker's range is limited to a small area of southwestern United States and northwestern Mexico. In California, this species is found only along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers were formerly associated with desert washes extending up to 1 mile from the Colorado River. Currently, they are found only in riparian areas along the Colorado River.	In California, this species is currently known only from the Colorado River; therefore this species is not expected on the Project site. The Applicant has also indicated in the Biological Technical Report (Tetra Tech EC, Inc. and Karl, 2011a) that the site does not contain suitable nesting habitat for this species. The nearest CNDDB (2011) records for this species are a 1986 record 9.4 miles east of the site at the Colorado River and a 2002 record from Sand Wash (Imperial County), 10.2 miles south of the CRS.
Gilded flicker *Colaptes chrysoides*	In California, the gilded flicker is known from the southeast; habitat includes stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Until the mid-1990's, this species was considered a subspecies of northern flicker (*C. atratus*). This species nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. This species may be nearly extinct in California.	This species is not expected to regularly use the Project site due to lack of suitable habitat. The closest CNDDB (2011) record for this species is a 1983 record approximately 13 miles northeast of the site, along the Colorado River.
Mountain plover *Charadrius montanus*	Mountain plovers do not breed in California, but are winter visitors primarily from September to mid-March. In California they are found in the Central Valley, Antelope Valley, San Jacinto Valley, Imperial Valley, and Palo Verde Valley. Mountain plover habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas, though use of these areas is suspected to be because of loss of native grassland and playa habitats.	This species is not expected to extensively use the site, but may use nearby agricultural areas. The closest CNDDB (2011) record for this species is a 1974 sighting 25 miles to the southwest in Imperial County, at the southern end of the Salton Sea.
Northern harrier *Circus cyaneus*	In western North America, the northern harrier breeds from northern Alaska south to Baja California, Mexico. This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	The Project site contains suitable wintering habitat for the northern harrier, and one wintering bird was observed during 2011 Project surveys (Tetra Tech EC, Inc. and Karl, 2011a). There are reported nesting records for this species in eastern Riverside County (CNDDB, 2011).
Peregrine falcon *Falco peregrines*	The Peregrine falcon's year-round range includes coastal and northwestern California and the Sierra Nevada and other California mountains. Additionally, this species winters inland throughout the Central Valley and in northeastern California. They are rare in the arid southeast, but they occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging, and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	This species may forage on the Project site though the site does not provide potential nesting habitat. One falcon was observed during 2011 Project surveys and this species may nest in nearby mountains. There are no reported nesting records for Riverside County (CNDDB, 2011).

TABLE 3.4-3 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT SITE

Birds (cont.)		
Prairie falcon *Falco mexicanus*	The prairie falcon inhabits dry environments in the North American west from southern Canada to central Mexico. They are found in open habitat from annual grasslands to alpine meadows at all elevations up to 3,350 m, but are associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. They require cliffs or bluffs for nesting though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcons will also prey on lizards, other small birds, and small rodents.	Three prairie falcons were observed during surveys, and the entire Project disturbance area (4,500 acres) contains suitable foraging habitat for this species. The Project site does not contain suitable nesting habitat, although adjacent mountains may. There are numerous CNDDB (2011) records in the region for this species, including eyrie records from Little Maria Mountains to the north (1977) and the Chuckwalla Mountains to the southwest (1978).
Purple martin *Progne subis*	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically. Neither the historical or current breeding range, however, includes the Colorado Desert. Purple martins' habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources. Threats to this species include loss of large tree and snags and competition from European starlings.	This species was observed migrating through the Project site, but is not expected to extensively use the site. There are six nesting records for this species from western Riverside County, each greater than 100 miles from the Project site (CNDDB, 2011).
Short-eared owl *Asio flammeus*	Short-eared owls breed through much of northern North America, and are year-round residents in some areas of California. Historically, this species occurred throughout much of California, west of the southern deserts, in low numbers. Currently, small populations breed in regularly in the Great Basin and in the Sacramento/San Joaquin River Delta area, but sporadically in other parts of its former range. Short-eared owls require open country that supports small mammal populations, and that also provides adequate vegetation to provide cover for nests. This includes salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.	The Project site contains suitable wintering habitat for the short-eared owl. This species was not observed during Project surveys. There are no Riverside County nesting records for this species (CNDDB, 2011).
Swainson's hawk *Buteo swainsoni*	Swainson's hawks require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in nonnative trees, such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands. While there are historical breeding records of this species from the Colorado Desert, this species is now known from southern California only as a spring and fall migrant. This reduction in breeding range is believed to be from loss of nesting habitat.	The Project site may provide foraging habitat for migrating individuals, and four individuals were observed in the Project site during surveys. There are no CNDDB-reported nesting records for this species in Riverside County; as the project is generally outside of this species' breeding range (Bechard et al., 2010).
Vaux's swift *Chaetura vauxi*	Vaux's swifts are not known to breed in Riverside County or elsewhere in southern California. Very few nests have been found, so their breeding range has been inferred from sightings of birds flying over potential nesting areas during their nesting season, in June and July. Vaux's swifts prefer to nest in the hollows formed naturally inside of large old conifer trees, especially snags, which are entirely lacking from the Project site.	This species was incidentally observed during surveys, and occurrences are expected to be migrants.

TABLE 3.4-3 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT SITE

Birds (cont.)		
Vermilion flycatcher *Pyrocephalus rubinus*	Vermilion flycatchers are rare breeders or residents in localized areas of southern California, including along the Colorado River. They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite.	In the Project vicinity, occurrences of this species are limited to the Colorado River. This species is not expected on the Project site. The closest CNDDB (2011) records are a historical record from 6 miles west of the study area from 1919, and a recent (1983) record from the Blythe golf course.
Yellow warbler *Dendroica petechia*	Yellow warblers historically bred throughout much of California except for high elevations, the Colorado Desert, and most of the Mojave Desert. Breeding abundance for this species has declined in much of California, as has the breeding range, especially in the Central Valley and parts of Owens Valley. In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. Currently, this species no longer breeds in much of the Riverside County segment of the lower Colorado River Valley. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter.	This species was observed during surveys, but is not expected to nest on the Project site due to lack of suitable habitat. The nearest nesting records for this species are a 1952 sighting near the Salton Sea and an undated record from Joshua Tree National Park; both greater than 45 miles from the Project site (CNDDB, 2011).
Yellow-breasted chat *Icteria virens*	The yellow-breasted chat occurs as a summer resident and migrant in California. In the southeastern California, the yellow-breasted chat breeds primarily in scattered locations in Owen's Valley and the Mojave, from the Salton Sea, and from the lower Colorado River Valley. This species occupies shrubby riparian habitat with an open canopy, and will next in non-native species including tamarisk. Threats to this species include loss of riparian habitat, and, it is suspected, pressure from cowbird parasitism.	In this region, this species is associated with the Colorado River only. The Project site does not contain suitable habitat for this species. CNDDB (2011) records in the region are associated with the Salton Sea and the Colorado River. The nearest nesting records for this species are two 1986 records 9.3 and 11.6 miles east of the Project site at the Colorado River (CNDDB, 2011).
Mammals		
Arizona myotis *Myotis occultus*	This species has been found from southeastern California through Arizona, New Mexico, and south into Chihuahua, Mexico. Arizona myotis is most commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	This species is not expected to occur due to lack of suitable habitat and the Project occurring below elevations where roosts typically occur. The closest CNDDB (2011) record is a historical occurrence from 1945 approximately 6 miles east of the gen-tie line south of the I-10 near the town of Ripley.
Cave myotis *Myotis velifer*	The cave myotis occurs from western Texas, to southern Nevada, southeastern California (only along the Colorado River), southward into Mexico, and is also widely distributed in Arizona. This species is found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a "cave dweller" and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts.	The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe, where individual bats of this species were detected during acoustic surveys (CNDDB, 2011).
Colorado Valley wood rat *Neotoma albigula venusta*	Occurs from southern Nevada, southeastern California, northeastern Baja California, to western Arizona. Colorado Valley wood rats are found in a variety of habitats including low desert, pinyon-juniper woodlands, and desert-transition chaparral. Suitable habitat elements for this species include washes where organic debris gathers, areas of prickly pear cactus and mesquite, rocky areas, and crevices in boulders which are used for cover and nest sites.	The nearest CNDDB record is from 1934 near Blythe and approximately four miles south and east of the gen-tie line and access road route north of the I-10 (CNDDB, 2011).

TABLE 3.4-3 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE PROJECT SITE

Mammals (cont.)		
Hoary bat *Lasiurus cinereus*	Hoary bat is the most widespread of North American bats and are highly associated with forested habitats in the west. They are highly associated with forested habitats in the west. Hoary bats roost are usually located at the edge of a clearing although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, and building sides.	This species may occur in the area as a foraging bat species. The closest CNDDB (2011) record is a historical (1919) occurrence approximately five miles east of the gen-tie line and access road route, south of the I-10.
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Pocketed free-tailed bat is a California species of concern. This species occurs in western North America, from southern California, central Arizona, southern New Mexico, western Texas, south into Mexico and Baja, California (WBWG 2009). Despite only a limited number of records, pocketed free-tailed bats are known to occur in the desert from March through August, when they then migrate out of the area. In California, they are found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe, where individual bats of this species were detected during acoustic surveys (CNDDB, 2011).
Townsend's big-eared bat *Corynorhinus townsendii*	This species has been reported in a wide variety of habitat types ranging from sea level to approximately 9,000 feet amsl. Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	This species has a potential to roost and forage on the Project site. There are no CNDDB occurrences within 10 miles of the Project site (CNDDB, 2011).
Yuma mountain lion *Puma concolor browni*	In the NECO planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal.	Mountain lion sign (scat) was found west of the solar plant site. This species likely uses the Project site but no definitive sign for this species was noted on the site during surveys. High quality habitat is available in the McCoy Mountains and McCoy Wash.
Yuma myotis *Myotis yumanensis*	This species ranges across the western third of North America from British Columbia, Canada, to Baja California and southern Mexico. Yuma myotis is usually associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects, but Yuma myotis also use tinajas in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. The species roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	The nearest CNDDB record for this species is from 2002 near the I-10 bridge over the Colorado River in Blythe, where individual bats of this species were detected during acoustic surveys (CNDDB, 2011).

SOURCES: CEC, 2010; CNDDB, 2011; Tetra Tech and Karl, 2011a

3.4.2 Applicable Regulations, Plans, and Standards

3.4.2.1 Federal

NEPA

NEPA (42 USC 4321 et seq.) declares a continuing federal policy that directs “a systematic, interdisciplinary approach” to planning and decision-making and requires environmental statements for “major Federal actions significantly affecting the quality of the human environment.” Implementing regulations by the CEQ (40 CFR Parts 1500-1508) requires federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environmental and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions. The BLM is the Lead Agency under NEPA for the Project.

Federal Endangered Species Act

The FESA designates threatened and endangered animals and plants and provides measures for their protection and recovery. “Take” of listed animal species and of listed plant species in areas under federal jurisdiction is prohibited without obtaining a federal permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 USC §§1531-1544). Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS for terrestrial species. The FESA also generally requires determination of critical habitat for listed species. If critical habitat has been designated, impacts to areas that contain the primary constituent elements identified for the species, whether or not it is currently present, is also prohibited. FESA §7 and §10 provide two pathways for obtaining authority to take listed species.

Under FESA §7, a federal agency that authorizes, funds, or carries out a project that “may affect” a listed species or its critical habitat must consult with USFWS. For example, the USACE must issue a permit for projects impacting non-wetland Waters of the U.S. or wetlands under USACE jurisdiction. In a §7 consultation, the lead agency (e.g., USACE) prepares a BA that analyzes whether the project is likely to adversely affect listed wildlife or plant species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action would adversely affect the species, USFWS then has 30 days to respond to the BA by issuing its BO determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat. If a “no jeopardy” opinion is provided, the project may proceed. If a jeopardy or adverse modification opinion is provided, the USFWS may suggest “reasonable and prudent measures” that would result in no jeopardy.

Under §10 of the FESA, private parties with no federal nexus (i.e., no federal agency will authorize, fund, or carry out the project) may obtain an Incidental Take Permit to harm listed species incidental to the lawful operation of a project. To obtain an incidental take permit, the applicant must develop a habitat conservation plan (HCP) which specifies effects to listed species, provides minimization and mitigation measures and funding, discusses alternatives considered and the reasons why such alternatives are not being used. If the USFWS finds that the HCP will not "appreciably reduce the likelihood of the survival and recovery of the species" it will issue an incidental take permit. Issuance of incidental take permits requires the USFWS to conduct an internal §7 consultation, thus triggering coverage of any listed plant species or critical habitat present on site (thus, listed plants on private property are protected under FESA if a listed animal is present). Unlike a §7 consultation, the USFWS is not constrained by a time limit to issue an incidental take permit.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already federally listed, proposed, or candidate species, or state-listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special-status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

CDCA Plan

The CDCA covers approximately 25 million acres of land in southern and southeastern California, with approximately 10 million acres being administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The MUCs form the backbone of the Plan, essentially zoning the CDCA into four major MUCs, as a city or county is zoned for land use classes. The Plan categories include approximately 4 million acres of Class C (controlled) lands (including roughly 3,600,000 acres of wilderness areas created under the 1994 California Desert Protection Act) to be preserved in a natural state with access generally limited to non-motorized, non-mechanized means; approximately 4 million acres of Class L (limited use) lands, providing for generally lower intensity, carefully controlled uses that do not significantly diminish resource values; approximately 1.5 million acres of Class M (moderate use) lands designated for mining, livestock grazing, recreation, energy, and utility development with mitigation required for any damage caused by permitted uses; and approximately 500,000 acres of Class I (intensive use) lands managed for concentrated uses with reasonable protection provided for sensitive natural values and mitigation of impacts and rehabilitation of impacted areas occurring when possible (BLM, 2007).

The Plan's goals and actions for each resource are established in its 12 elements including the Wildlife Element and the Energy Production and Utility Corridors Element, among several others (BLM, 2007).

The Project site is located within lands designated "Class L," or limited use. Solar energy facilities are permitted in Class L areas provided NEPA is complied with and the CDCA Plan Amendment process is followed.

NECO Plan

The NECO Plan is a landscape-scale, multi-agency planning effort approved in 1992 that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over 5 million acres and hosts 60 sensitive plant and animal species. The NECO Plan amends the 1980 CDCA plan to provide additional protections to wildlife and plants, particularly the desert tortoise. A summary of the major plan amendment decisions of the NECO Plan includes:

1. Establish Regional Standards for Public Land Health and set forth guidelines for grazing management.

2. Establish two DWMAs encompassing about 1.75 million acres that are managed as ACECs for recovery of the desert tortoise.

3. Establish the Southern Mojave and Sonoran WHMAs or bighorn sheep totaling over 1 million acres and 13 multi-species WHMAs totaling over 500,000 acres such that 80 percent of the distribution of all special-status species and all natural community types are included in conservation management areas.

4. Combine Herd Management Areas for wild horses and burros and adjust the Appropriate Management Levels.

5. Designate routes of travel (approximately 95 percent of existing routes will remain available for vehicle access).

6. Identify priorities for potential acquisition of private lands and disposal of public lands.

7. Provide access to resources for economic and social needs.

8. Incorporate 23 wilderness areas (totaling over 1 million acres) established by the 1994 CDPA in the CDCA.

Approved mitigation measures were presented in Appendices D through G of the Proposed NECO Plan/FEIS relating to desert tortoise, desert restoration, public education, and limitations on cumulative new surface disturbance. All practicable means to avoid or minimize environmental harm by the plan have been adopted.

Migratory Bird Treaty Act

The MBTA implements international treaties between the U.S. and other nations that protect migratory birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

Lacey Act

The Lacey Act, as amended (16 USC 3371-3378) protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport, or sale of protected species.

The Bald and Golden Eagle Protection Act

The BGEPA prohibits take, which is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, disturb, or otherwise harm eagles, their nests, or their eggs." Under the BGEPA, "disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. On September 11, 2009, the USFWS set in place rules (50 CFR parts 13 and 22) establishing two new permit types: (1) take of bald and golden eagles that is associated with, but is not the purpose of, the activity; and (2) purposeful take of eagle nests that pose a threat to human or eagle safety. Specifically, the BGEPA authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; and/or the activity, or mitigation for the activity, will provide a net benefit to eagles; and allows inactive nests to be taken only in the case of safety emergencies.

As described in the USFWS Draft Eagle Conservation Plan (ECP) Guidance dated January 2011 (USFWS, 2011c), the USFWS recommends that project proponents prepare an ECP to avoid, minimize, and mitigate project-related impacts to eagles to ensure no net loss to the golden eagle population. If required by the USFWS, pursuant to BLM Instructional Memorandum (IM) 2010-156, the BLM will request "concurrence" from the USFWS that the ECP meets specific requirements.

3.4.2.2 State

California Endangered Species Act

The CESA (Fish and Game Code §2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species that are listed or candidates for listing by the State of California. Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects are not listed by the State. Take is defined similarly to but more narrowly than FESA and is prohibited for listed species. Take authorization for listed and candidate species may be obtained by the Applicant from CDFG under CESA §§2081 or 2080.1 if incidental to otherwise lawful development projects. In this case, private developers consult with CDFG to develop a set of measures and standards for managing the listed or candidate species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

Other Provisions of the California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. In October 2011, SB 618 amended Fish and Game Code provisions that relate to fully protected species. Prior to SB 618, CESA prohibited the "take" of species that have been listed as fully protected. The amendment allows for incidental take of fully protected species when a conservation plan has been approved and implemented to ensure protection of the species. Other exceptions in which CDFG may issue permits or licenses to authorize the take of fully protected species include scientific research and live capture and relocation of fully protected species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of the CDFG to maintain viable populations of all native species. To that end, the CDFG has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

3.5 Cultural Resources

A cultural resource is a location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include both archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups, e.g., "traditional cultural property" (BLM, 2004). Cultural resources may be but need not be determined eligible for the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) to receive consideration under NEPA (BLM, 2004). The cultural resources that are evaluated in this section may fall under one of the following resource types: prehistoric archaeological resource, ethnographic resource, and historic-period archaeological and built environment resources.

Prehistoric resources are associated with human occupation and use prior to sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the 18th century until 1769, when the first Europeans permanently settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and built environment (i.e. structures, buildings, or other built features) are associated with Euroamerican exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity.

The term "historic property" is used for the purposes of §106 of the National Historic Preservation Act of 1966 (NHPA), and is defined in 36 CFR Part 800, the implementing regulations for §106, as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP] . . . , [which] includes artifacts, records, and remains that are related to and located within such properties" (36 CFR §800.16(*l*)(1)). The term also includes "properties of traditional religious and cultural importance to an Indian tribe . . . that meet the National Register criteria" pursuant to 36 CFR §60.4 (36 CFR §800.16(*l*)(1)). For definitions of other terms used in this section, please refer to Chapter 7, *Glossary*. Historic properties are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with §106.

A BLM Class III Cultural Resources Inventory Report has been completed by AECOM in support of this PA/EIS (Jordan and Tennyson, 2011). In addition, the BLM has initiated consultation with Indian tribes to identify places of traditional religious and cultural significance that may otherwise be left unidentified by these studies. Chapter 5 provides a discussion of the BLM's tribal consultation process.

3.5.1 Environmental Setting

3.5.1.1 Geological Setting

The following discussion of the geologic setting of the Project area is excerpted from a study conducted by AECOM for the Project (Jordan and Tennyson, 2011).

The Project is located on the Palo Verde Mesa, a series of ancient raised river terraces associated with the Pleistocene course of the lower Colorado River. The relatively flat topography of the mesa slopes gently down from the northwest to the southeast and is bounded by the McCoy Mountains to the west and the Little and Big Maria Mountains to the north and east. To the south, the Palo Verde Mesa grades into an east-west-trending valley pass, through which modern I-10 was built adjacent to the Coco-Maricopa Trail (CA-RIV-53T), an important prehistoric transportation corridor from the Colorado River to the Pacific Coast.

The Palo Verde Mesa is part of the northern extent of the Colorado Desert, a subdivision of the greater Sonoran Desert. Encircling the northern Gulf of California, the Colorado Desert spans portions of northwest Mexico, southwest Arizona, and southeast California (Schaefer, 1994a). It is a subtropical desert that is periodically influenced by tropical weather conditions, including massive seasonal rain storms known locally as monsoons.

Sediments in the Project vicinity generally originate from quaternary riverine deposits from the Colorado River, and alluvial fan deposits from the mountains to the northwest. Much of the Project contains well-developed, heavily patinated desert pavements subject to deflation from frequent winds. Running northwest to southeast, several alluvial washes cut through stable desert pavement surfaces and transition to active ephemeral washes consisting of sandy silts combined with small cobbles and poorly sorted gravels.

The western portion of the Project area is located at the base of the McCoy Mountains. Much of the area includes well-developed desert pavement that is cut by deep alluvial channels trending generally from northwest to southeast. Most of the pavements consist of basalt with outcrops of quartz eroding from the McCoy Mountains. The drainages that bisect this ridge are shallow at the western edge of the Project and get progressively deeper as they continue eastward down the slopes at the base of the McCoy Mountains.

Along the linear facilities of the Project, extensive, linear deposits of water-rounded cobbles sit atop remnant river terraces associated with the Pleistocene course of the Colorado River. These terrace-top cobble deposits, known as “pebble terraces” (Schaefer, 1985), consist primarily of fist-sized water-rounded rocks representing a variety of stone materials collected from the length of the Colorado River. The pebble terraces were used by the prehistoric inhabitants of the region as a ready source of fine-grained stone for the production of flaked stone tools (Flenniken and Spencer, 2001; Schaefer, 1985). The most common tool stones present on the pebble terraces are quartzite, crypto-crystalline silicate (CCS), and chalcedony. Two such pebble terraces exist along the linear facilities, and both were previously recorded as archaeological sites CA-RIV-2846 and CA-RIV-3419.

At the beginning of the Holocene, the Colorado River retreated to the east and began to cut deeply into the surrounding sediments. Periodically, though, the river dramatically flooded, changed course, and flowed into previously dry inland areas. After large flood episodes, water from the Colorado River was occasionally impounded and diverted into the Salton Trough, creating a vast inland freshwater lake in the area of the historical Lake Cahuilla. Impounded waters from the Colorado River would continue to flow into the Salton Trough for years or even centuries until another major flood event sufficiently reworked the river delta at the Gulf of California to allow the river to resume its typical course. At these times, numerous ethnically and linguistically distinct Native American groups converged on the newly formed lake. Some of the intermittent prehistoric use of the Palo Verde Mesa likely dates from these episodes of inland lake activity.

3.5.1.2 Paleoclimate

Identifying the kinds and distribution of resources necessary to sustain human life in an environment and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the Project is located, the Mojave Desert, has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

The Pleistocene (1.8 million to 10,000 years ago), and the Holocene (10,000 years ago to the present) environmental record from the Mojave Desert provides a model for the Colorado Desert. Summaries of the development and changes in vegetation in the Mojave Desert and surrounding region during these periods are provided by Grayson (1993, pp. 119–128, 139–143, 194–195, 199–202, 215, as cited in CEC, 2010), Spaulding (1990, as cited in CEC, 2010), Tausch et al. (2004, as cited in CEC, 2010), Thompson (1990, as cited in CEC, 2010), and Wigand and Rhode (2002, pp. 332–342, as cited in CEC, 2010). All note the vegetation history of this region has been primarily studied by analysis of plant macrofossils contained in prehistoric packrat middens. Pollen studies from this region are largely lacking.

In general, Tausch et al. (2004, fig. 2.3; see also Wigand and Rhode, 2002, pp. 321–332, as cited in CEC, 2010) note the Early Holocene (8500 to 5500 BC) in the Mojave Desert was characterized by a post-glacial warming trend, accompanied by periods characterized by variable moisture. The subsequent Mid-Holocene (5500 to 3000 BC) was the warmest, driest part of the entire Holocene. During the post-Mid-Holocene transition (3000 to 1500 BC), relatively warm, dry conditions prevailed.

In the approximate period from 1500 to 600 BC, a cool, wet interval has been termed the Neoglacial by climate scientists. It was followed by a much drier, and possibly relatively cooler, period, the Post-Neoglacial Drought (600 BC to 400 AD). The next interval, the Medieval Climatic Anomaly (400 to 1350 AD) was characterized by intensified drought and relatively warm conditions (Meko et al., 2001; Stine 1994, 1996, 1998, 2000 as cited in CEC, 2010). A period called the Little Ice Age followed (1350 to 1850 AD) that was cold and somewhat dry (Fagan, 2000;

Grove, 1988; Meko et al., 2001; Scuderi, 1987a, 1987b, 1990, 1993 as cited in CEC, 2010). Present climate conditions then commenced.

During the wetter periods (the Late Pleistocene, the Neoglacial, and the Little Ice Age), some of the basins in the Mojave Desert Region (and in the Colorado Desert region, as well) became shallow lakes, with extensive marshy shorelines. Being sources of food and materials, these lakes would have drawn Native Americans and perhaps would have encouraged settlement (Gallegos et al. 1980, p. 93, as cited in CEC, 2010). The elevation of the Palo Verde Mesa prevented a lake from forming where the Project would be located, but within a few miles to the west, two lakes, Ford Dry Lake and Palen Dry Lake, are known to have formerly existed.

3.5.1.3 Prehistoric Background

The shortage of data prior to the Late Prehistoric period (discussed below) in the Colorado Desert has hindered development of a comprehensive scheme detailing the cultural chronology for the region. The following chronology is extrapolated from Sutton et al.'s (2007, p. 236, table 15.4) concordance of terms for temporal periods and complexes in the Mojave Desert. Other pertinent chronological schemes for the Colorado Desert occur in Love and Dahdul (2002, p. 69, fig. 2), Warren (1984, pp. 409–430, fig. 8.27), and Weide (1976, p. 82, table 3).

Late Pleistocene

Paleoindian

The Late Pleistocene Paleoindian Period (about 10000 to 8000 BC) is better represented in the Mojave Desert than in the Colorado Desert (Beck and Jones, 1997). Isolated fluted projectile points assignable to the Western Clovis Tradition have been recovered from the Pinto Basin, Ocotillo Wells, Cuyamaca Pass, and the Yuha Desert (Dillon, 2002, p. 113; Rondeau et al., 2007, pp. 64–65, fig. 5.1, table 5.1; Moratto, 1984, pp. 77, fig. 3.1, 87). All are surface finds and have no associations with extinct fauna.

Early Holocene

Lake Mojave Complex

The Lake Mojave complex (about 8000 to 6000 BC) is also known as the Western Pluvial Lakes/Western Stemmed Tradition (see Beck and Jones, 1997; Erlandson et al., 2007; papers in Graf and Schmitt, 2007; Schaefer 1994b, pp. 63–64; Sutton et al., 2007; papers in Willig et al., 1988). As with the preceding Paleo-Indian Period, the Lake Mojave Period is better represented in the Mojave Desert than in the Colorado Desert. It is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. These artifacts often occur in undated surface contexts. Assemblage composition and site structure suggest highly mobile foragers, often traveling considerable distances. Little reliance upon vegetal resources is evidenced. The value of wetland habitats remains unclear. Lake Mojave lifeways may result from relatively rapidly changing climate and habitats during the Early Holocene. This would have produced unpredictability in resource distribution and abundance, producing a high degree of residential mobility.

Middle Holocene

Pinto Complex

The Pinto complex, dated at about 8000 to 3000 BC, appears to overlap the Lake Mojave complex. During the Lake Mojave and Pinto complexes, stone tools were made from materials other than obsidian and CCS. Pinto Series points are stemmed with indented bases, and display high levels of reworking. Bifacial and unifacial cores/tools are common. Ground stone tools are moderately to very abundant, indicating greatly increased use of plant resources. Pinto complex sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Large apparent residential bases occur. They probably were occupied for prolonged periods by moderate to large numbers of people, practicing a collector subsistence strategy. Logistical forays into surrounding resource patches probably were made from these sites.

Deadman Lake Complex

Currently, the Deadman Lake complex, dating about 7500 to 5200 BC, appears to be confined to the Twentynine Palms area. Sites usually are surficial and located on old alluvial pediments. Artifacts include small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools. The abundance of cobble tools suggests an emphasis upon plant processing. The Deadman Lake and Pinto complexes may represent two different human populations practicing different seasonal or annual rounds, or Deadman Lake may represent a component of the overall Pinto complex adaptation.

Late Holocene

In the approximate period of 3000 to 2000 BC, environmental conditions in the Mojave Desert were warmer and drier. Few archaeological sites date to this period. This suggests population densities were very low. Some areas may have been largely abandoned.

Gypsum Complex

Dating between about 2000 BC and 200 AD, the Gypsum complex is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. Numerous bifaces also occur. Manos and metates are relatively common. During the early portion of the Gypsum complex, settlement-subsistence appears focused near streams. At this time, increased trade and social complexity apparently occurred. Gypsum complex components are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities includes quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum complex sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex

Around 200 to 500 AD, cultural systems profoundly changed in the southern California deserts. Introduction of the bow and arrow, represented by Rosegate Series points, occurred. Previously, at about the beginning of the first millennium AD, moister conditions may have increased wetlands. During Rose Spring complex times, population increased, and significant changes in artifact assemblages took place. Well-developed middens yielded artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian. Obsidian procurement and processing apparently significantly structured settlement-subsistence.

Rose Spring sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of pit houses and other types of structures. Human populations appear to have peaked, possibly resulting from a more productive environment and a more efficient hunting technology. During the middle of Rose Spring times, climatic conditions became warmer and dryer. Increased populations, the warmer, drier climate, and increased hunting efficiency may have produced resource depletion. This may have resulted in changes ending the Rose Spring complex around 1100 AD.

Late Prehistoric

Starting at approximately 1000 to 1100 AD, the Late Prehistoric period began. During this time, new technologies were introduced; populations appear to have declined, and historic Native American cultures became established. Lake Cahuilla was a focal point of settlement-subsistence. A complex cultural landscape composed of rock art, trails, and geoglyphs[1] developed. Trade and exchange were elaborated, with an emphasis on links between coastal southern California and the Southwest. In addition to pottery, artifact assemblages include Desert Series projectile points, shell and steatite beads, and a variety of milling tools. Obsidian use declined significantly, with CCS becoming the dominant type of stone used for stone tools.

In the Late Prehistoric period, too, agriculture and pottery were introduced to the native peoples of the Colorado Desert. Agriculture probably began around 700 AD in the Colorado Desert. It most likely was introduced from the Hohokam area in southern Arizona or from northern Mexico and had its greatest impact along the Lower Colorado River (McGuire and Schiffer, 1982; Schaefer, 1994b, pp. 65–74; Schaefer and Laylander, 2007, pp. 253–254,). At approximately the start of the first millennium AD, ceramic artifacts began to appear in the Colorado Desert. They included pottery types assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions (Lyneis, 1988; Waters, 1982). At the time of the advent of sustained Euroamerican contact in 1769 AD, a number of Native American groups inhabited the Colorado Desert, using a complex cultural landscape, which appears to have been largely developed during the preceding millennium.

[1] Geoglyphs, also known as intaglios, were created on desert pavements by rearranging and/or clearing pebbles and rocks to form alignments, clearings, and/or figures. Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River. It is assumed that they played some role in sacred or ritual activities.

3.5.1.4 Ethnographic Background

Currently, the region in which the Project site is located is believed to have been occupied at various times by the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma.

Singer (1984, pp. 36–38) concluded the Chuckwalla Valley was not clearly assigned to any Native American group on maps depicting group territories. Following Johnston and Johnston (1957), Singer observed that the west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No physical evidence suggested that the Cahuilla occupied the area. Given its east-west orientation and location, however, the Chuckwalla Valley may have been neutral territory, occupied by no Native American group in particular, which served as an east-west trade and travel route.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (see Bean and Lawton, 1967 for a comprehensive bibliography of sources). Primary sources for the Cahuilla include Bean (1972, 1978), Bean and Saubel (1972 as cited in CEC, 2010), Drucker (1937), Gifford (1918 as cited in CEC, 2010), Hooper (1920), James (1960), Kroeber (1908, 1925, pp. 692–708), and Strong (1929, pp. 36–182). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Takic subfamily of the Uto-Aztecan family (Golla, 2007; Shipley, 1978; Moratto, 1984).

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978, p. 375) described it as, "…from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west." The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Cupeno, Gabrielino, Serrano, and Luiseño shared common cultural traditions. The neighboring Cupeno were closest linguistically to the Cahuilla.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Villages were connected by trail networks used for hunting, trading, and social visiting. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Hunting and meat processing were done by men. Game included deer, mountain sheep, pronghorn, rabbits, rodents, and birds. These were hunted by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts with fire drives sometimes occurred.

The Cahuilla had access to a variety of plant resources present within a diverse suite of habitats (Barrows, 1900; Bean and Saubel, 1972 as cited in CEC, 2010). Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15 to 20 feet long, and ceremonial houses. The chief's house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included a communal men's sweathouse and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of 3 to 10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. Clan territory was jointly owned by all clan members. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan's territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence were owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official responsible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberatively, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Disputes between Cahuilla villages usually arose over access to resources. Other causes included sorcery, personal insults, kidnapping of women, nonpayment of bride price, and theft. Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, and marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The descendants of the Cahuilla live on two principal reservations. One is the Agua Caliente Indian Reservation, located in the Palm Springs area and occupying 127 square kilometers (km^2) (49 square miles [mi^2]). The Agua Caliente Band has important influences in the local economy since its members operate an array of business enterprises, including land leasing, hotel and casino operations, and banking. The Morongo Indian Reservation is the second reservation that has many Cahuilla descendants. The Morongo Reservation is located in northern Riverside County, has a land base of 127 km^2 (49 mi^2), and a resident population of 954, the majority of Native American heritage. The Morongo Band of Mission Indians operates the Morongo Casino Resort and Spa. Smaller bands of Cahuilla are located in various locations around southern California (Jordan and Tennyson, 2011).

The Serrano

Literary sources about the Serrano include Bean and Smith (1978), Benedict (1924, 1929), Drucker (1937), Gifford (1918), Johnston (1965), Kroeber (1925, pp. 615–619), and Strong (1929, pp. 5–35). The Serrano shared many traits and artifacts with the Cahuilla, discussed above. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family (Golla, 2007; Shipley, 1978; Moratto, 1984).

It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands at the base and north of the San Bernardinos in the desert near Victorville, and territory extending east in the desert to Twentynine Palms and south to and including the Yucaipa Valley.

The Serrano occupied small village hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage or lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows, arrow straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the lineage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's life cycle were occasions for ceremonies. After a woman gave birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (*datura* ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual 7-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Chemehuevi

Primary sources for the Chemehuevi include Drucker (1937), Kelly (1934, 1936), Kelly and Fowler (1986), Kroeber (1925, pp. 593–600), Miller and Miller (1967), and Roth (1976, 1977). Carobeth Laird married a Chemehuevi and collected a large corpus of data, primarily on ritual, religion, and myth (Laird 1974a, 1974b, 1975a, 1975b, 1976, 1977a, 1977b, 1977c, 1978a, 1978b, 1984). The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family (Golla, 2007, Shipley, 1978; Moratto, 1984). Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mojave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi.

For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the Maria Mountains, paralleling the Iron Mountains, and then running between Old Woman Mountain and Cadiz Dry Lake (Kelly, 1934; Kelly and Fowler, 1986, p. 369, fig. 1). Mojave territory lay to the northeast, and that of the Las Vegas group of Southern Paiute to the north-northwest.

The Chemehuevi lacked any form of overall "tribal" organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as "bands." Each band was composed of a small number of camps/communities/villages. Bands most likely correspond to economic clusters (Kelly, 1964). Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from one to two households to 10 to 20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mojave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi hunted in the Tehachapi area and went to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8 to 10 Chemehuevi men joined men from neighboring groups to make a 2-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn, and desert tortoise were among the animal food resources they used (Kelly and Fowler 1986, p. 369). Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil’s claw using techniques similar to Mojave agricultural practices (see below).

Chemehuevi winter houses were conical/subconical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mojave. During the summer, many Chemehuevi lived outside, often building and occupying armadas and windbreaks.

Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mojave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the most common form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls were held, with the former focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of *datura* or a trance. Chemehuevi families held a mourning ceremony (“cry”), with which several speeches and songs were associated, within the year after the death of a relative. The “cry” was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Chemehuevi lost their traditional lands to the U.S. government in 1853. A little more than a half-century later (in 1907), the Chemehuevi Valley Reservation was established. The tribe received formal federal recognition and was reinstated in 1970. The Chemehuevi have a contemporary land base of 32,000 acres of trust land that incorporates 30 miles of Colorado River frontage. Descendants of the Chemehuevi live on the Colorado River Indian Tribes Reservation and also reside on several other reservations, including the Twentynine Palms Reservation (Jordan and Tennyson, 2011).

The Mojave

Information regarding the traditional lifeways of the Mojave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euroamerican contact had begun to alter traditional ways of life. The following summary derives mainly from Kroeber (1925 as cited in CEC, 2010) and Stewart (1983a, 1983b).

The name Mojave is a variation on the name Hamakhava, which is what the tribal people called themselves (Kroeber, 1925, p. 727). The Mojave language is classified into the Yuman subfamily of the Hokan language family. The Mojave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mojave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mojave tribal settlement is reported to have centered in the Mojave Valley where their population densities were observed to be the greatest (Stewart, 1983b, p. 55).

The Colorado River served as something of an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. Within these bottomlands, the Mojave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mojave supplemented their diet mainly by gathering wild plants and by fishing, which served as their principle source of flesh non-plant food. Hunting played a minor role in the Mojave subsistence economy (Stewart, 1983b, pp. 56–59).

Technology of the Mojave was relatively simple, and tools were reported to have been crafted to meet only the minimum requirements of utility (Stewart, 1983b, p. 59). According to Kroeber (1925, p. 736), the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing (Kroeber, 1925, pp. 736–737). Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian (Stewart, 1983b, p. 59). Since hunting was of relatively little significance to the Mojave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks (Stewart, 1983b, pp. 59–61).

Mojave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mojave's loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory (Stewart, 1983a, 1983b).

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mojave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two (Stewart, 1983b, p. 57). During most of the year, the Mojave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mojave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their principle weapons were bows and arrows and hard wood clubs. According to Kroeber (1925, p. 727), their main motivation for traveling was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but were not heavily interested in trade.

The Mojave were culturally similar to the other River and Delta Yumans: the Quechan, Halchidhoma, Maricopa, and Cocopa. During ethnographic times, the Quechan were considered friends and allies of the Mojave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mojave engaged in warfare (Stewart, 1983b, p. 56). The Mojave were also friendly with the Upland Yuman tribes of the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed.

One of the most important rituals observed by the Mojave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased (Stewart, 1983b, pp. 65–67).

Due to their relatively remote location inland, the Mojave maintained their independence throughout the Spanish period of the 16th and 17th centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mojave provided similar descriptions of Mojave lifeways as those reported later by ethnographers. The ancestors of the Mojave are believed to have resided in the area for at least 1,000 years, and their mode of life in prehistoric times is thought to be similar to that observed historically (Stewart, 1983b, p. 56).

Today, many of the descendants of the indigenous Mojave reside on or near one of two reservations located on the Colorado River. The Fort Mojave Indian Reservation includes areas of California, Arizona, and Nevada. The reservation covers 42,000 acres, with its headquarters in Needles, California. Two tribal casinos are operated on the reservation, and there are also a variety of recreational facilities and a resort (Jordan and Tennyson, 2011).

The Colorado River Indian Reservation is composed of land in California and Arizona and is shared by the Mojave, Chemehuevi, Hopi, and Navajo nations. This reservation includes almost 300,000 acres of land and includes business interests centering on agriculture, a casino, outdoor recreation, and light industry. The original Colorado River and Fort Mojave reservations were established in 1865 and 1870, respectively. Although the four combined groups are united within the Colorado River Indian Reservation and act as a single geo-political unit, each Colorado River Indian Tribe continues to maintain and observe its individual traditions, distinct religions, and culturally unique character (Jordan and Tennyson, 2011).

The Quechan/Yuma

The following summary of the Quechan or Yuma is derived mainly from Bee (1983), Kroeber (1925 as cited in CEC, 2010), and Stewart (1983a).

Quechan is a variation on the names Kwichyan or Kuchiana, which are the names the tribe called themselves, but this group was also commonly known as the Yuma. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. According to Kroeber (1925, p. 782), the Quechan and their neighbors to the north, the Mojave, appear to be virtually identical in terms of their agriculture, manufactures, clothing, hair dress, houses, warfare, and sense of tribal unity.

The ethnographic territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered on the confluence of the Colorado and the Gila Rivers, extending several miles north and south along the Colorado and east along the Gila. Quechan legend tells of a southward migration of their ancestors from a sacred mountain; however, it is not known when the ancestors of the Quechan first settled near the confluence (Bee 1983, p. 86). No group of this name was mentioned in the account of Hernando de Alarcón when he passed through the area during an expedition in 1540, and the first reference to this group did not appear in Spanish documents until the late 17th century, at which time they were settled around the river confluence area (Bee, 1983, p. 86).

In an environment otherwise surrounded by dry desert terrain, the subsistence economy of the Quechan focused on riverine agriculture, which was one of the main sources of food for the tribe. Crops were cultivated in the richly silted river bottomlands following the recession of the spring floods and provided a relatively high yield in exchange for relatively low labor output (Bee, 1983, pp. 86–87). The main cultivated crops included corn, tepary beans, pumpkins, and gourds. In post-contact times, watermelons, black-eyed peas, muskmelons, and wheat were introduced by

Europeans and brought into cultivation by the Quechan, as well. The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants were also collected (Bee, 1983, p. 87; Castetter and Bell, 1951, pp. 187–188). Fishing was of minor importance, as there were few species in the lower Colorado River suitable for eating. Among the fish sought were the humpback, white salmon, and boneytail, which were sometimes caught with unfeathered arrows or cactus spine hooks, but more often taken with traps and nets during floods (Forde, 1931, pp. 107–120). Given the low incidence of game available in the area, hunting played a minor role in the overall subsistence economy (Bee, 1983, p. 86).

Like the Mojave, Quechan tribal settlements, or rancherias, consisted of extended family groups that were widely dispersed along the riverbanks. Settlements shifted throughout the year, dispersing into smaller groups along the bottomlands during the spring and summer farming seasons and reconvening into larger groups on higher ground, away from the river, during the winter and spring flood periods (Bee, 1983, pp. 87–88). The geographic dispersion of the households within the rancheria groups was closely correlated with the condition of the rivers and the technology of riverine agriculture (Bee, 1983, p. 89). The warm climate and scant precipitation made substantial housing unnecessary for most of the year, so most people made use of ramadas or dome-shaped arrowweed shelters. Each rancheria typically had one or two large, earth-covered shelters for the rancheria leaders’ families, but these shelters also accommodated small crowds during colder weather (Forde, 1931, p. 122).

Much like the Mojave, Quechan technology lacked technical or decorative elaboration beyond the demands of minimal utility (Bee, 1983, p. 89, as cited in CEC, 2010). Quechan bows did not feature “backed” construction and so lacked power, and their arrows were frequently untipped, so the bow and arrow’s range was short and the penetrating power weak. Sharpened staffs served as digging sticks or, when cut in longer lengths, as weapons (Bee, 1983, p. 89).

There were no marked gradations in wealth, and social pressure favored the sharing of one’s abundance with others who were less fortunate. Land ownership was informal, and people did not show much interest in the accumulation of material goods beyond the immediate needs of the family group or the surplus maintained by local leaders for redistribution to needy families within their rancheria (Bee, 1983, p. 89). Lands were not inherited by family members upon the death of an individual; rather, the lands of the deceased were abandoned, and replacement plots were sought by the family members.

Despite the wide distribution of settlements, the Quechan had a strong sense of tribal unity. As with their neighbors and allies, the Mojave, warfare played a major role in Quechan culture, and it was during times of warfare that tribal unity was most prevalent among the individual settlements (Bee, 1983, p. 92). Their major enemies were the Cocopa and the Maricopa, and they often allied themselves with the Mojave in strikes against common enemies (Bee, 1983, p. 93). Bee (1983, p. 93) suggests that warfare among the riverine peoples may have increased in scale and intensity during the 18th and early 19th centuries due to new economic incentives, such as the opportunity to trade captives to the Spaniards or to other tribes for horses or goods.

Quechan social and political organization, like that of the Mojave, appears to have been very informal, with no one individual or group having significant authority over others. Two types of tribal leadership have been reported for the Quechan, one for civil affairs and the other for war, but it is questionable how influential these leadership roles may have been. Each rancheria had one or more headmen, but their authority was contingent upon public support and continued demonstration of competence. According to Bee (1983, p. 92), important matters at either the tribal or the rancheria level were always decided by consensus, sometimes after long debates dominated by the better and more forceful speaker.

Another important aspect of Quechan society that was shared with the Mojave concerns the commemoration of the dead, which was an elaborate ceremony involving wailing and the destruction of property and ritual paraphernalia. All possessions of the deceased, including the family home, were destroyed or given away (Bee, 1983, pp. 89, 93–94).

The contemporary Quechan community is concentrated in the lands of the Fort Yuma-Quechan Reservation and has its main headquarters in Fort Yuma, Arizona. The reservation is approximately 45,000 acres and is located along the lower Colorado River in both Arizona and California just north of the U.S./Mexico border. The Tribal Enrollment Office numbers the registered members of the Quechan population as 2,475 members. The economic basis for the tribe consists of farming, sand and gravel operation, recreational vehicle parks, a grocery store, a museum, a utility company, a fish and game department, and a resort/casino (Jordan and Tennyson, 2011).

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and the Halchidhoma is meager in comparison to the Mojave and the Quechan. The following brief summary is derived from Harwell and Kelly (1983 as cited in CEC, 2010) and Stewart (1983a).

The Halchidhoma first entered written history in the early 17th century with the account of Juan de Oñate, who encountered the “Alebdoma” or “Halchedoma” during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encountered by missionary-explorer Eusebio Francisco Kino in the early 18th century, the Halchidhoma (or “Alchedoma,” as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halchidhoma lay along the lower Colorado between the Mojave and the Quechan territories. They were later driven from that area under pressure from their hostile Mojave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa (Stewart, 1983a).

The term Maricopa refers to the Yuman-speaking groups who in the early 19th century occupied the area along or near the Gila River and its tributaries (in what is now southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mojave, all three of which are classified as members of the River branch of the Yuman language family (Harwell and Kelly, 1983, p. 71). The Maricopa call themselves *pi•pa•s*, “the people.” The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late 17th century (Harwell and Kelly, 1983, p. 83).

The Maricopa, who by the early 19th century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mojave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same (Harwell and Kelly, 1983, p. 71). The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little interest to the River Yumans and remained at a low level of development (Stewart, 1983a).

Today, the Halchidoma are part of the Salt River Pima–Maricopa Indian community that is recognized as a sovereign tribe and is located in the metropolitan Phoenix, Arizona, area. This reservation is bounded by the cities of Scottsdale, Tempe, Mesa, and Fountain Hills. This tribal community encompasses 52,600 acres. Two distinct backgrounds and cultures are joined within this single community composed of the Pima: Akimel O'Odham (river people) and Maricopa Xalychidom Piipaash (people who live toward the water). Approximately 12,000 acres are under cultivation in a variety of crops, including cotton, melons, potatoes, onions, broccoli, and carrots. Commercial development is reserved along the community's western boundary. The community owns and operates several business interests, including a golf course, financial services, gaming resort, recreational facility, and landfill (Jordan and Tennyson, 2011).

3.5.1.5 Historical Background

The Colorado Desert area, in which the Project would be located, has remained one of the more sparsely populated regions of the American West. The harsh arid environment and shortage of natural water supply has presented a challenge to the development of trans-desert routes for the movement of people and goods, the exploitation of resources in the area, and the establishment of permanent settlement. The major historical themes for the Colorado Desert region and the Project area in eastern Riverside County, in particular, are centered on the establishment of transportation routes, water access and control, agriculture, ranching, mineral exploitation, and military uses. The following brief historical background of the Colorado Desert area in eastern Riverside County is derived from the following sources: Bischoff, 2000; Castillo, 1978; Farmer et al., 2009; Solar Millennium, 2009; Von Till Warren et al., 1980; and WESTEC, 1982.

The earliest recorded history of the lower Colorado River region began with the expeditions of Spanish explorers, who were lured by rumors of a rich northern Indian civilization. However, due to the Spaniards' failure to find the fabled northern treasures and the remoteness of the region, the Colorado Desert was seldom visited during the Spanish and Mexican periods.

The desert region has produced a variety of mineral deposits, including gold, silver, fluorite, manganese, copper, gypsum, iron, and uranium, and mining activities played a significant role in stimulating early occupation and travel across the arid desert. Following the end of the Mexican period in 1848 and the onset of the California Gold Rush in 1849, a flood of gold-seeking emigrants began to pour into California, some choosing the southern overland route through the desert, many of whom were unprepared and suffered extreme hardships. The construction and expansion of the Southern Pacific Railroad into the desert in the late 1870s was a major factor in facilitating travel and transport of supplies to the remote areas of eastern Riverside County, enabling further development of mines, irrigation, and settlement in the area.

The 1880s and 1890s were years of relative prosperity for mining regions of eastern Riverside County. Intermittent mining activity has occurred in the area since that time; however, in the Palo Verde Valley area, mining has remained a relatively small part of the local economy. Evidence of past mining activity in the region is evidenced by a scattering of abandoned prospecting pits, collections of food trash and other debris, and a handful of prospect claim markers in the form of wooden stakes, small stone cairns, and metal cans, which may have originally contained claim papers.

Automobile travel across and within the Colorado Desert area initially developed using existing wagon roads or following railroad rights of way. By the early 20th century, the automobile became the preferred mode of transportation. In 1914, Riverside County established the route from Mecca to Blythe as an official County road, which served as a main route across the desert. County officials dug wells and erected signposts along this road to serve its few travelers. In the early 1920s, Highway 60 was built to the south of the original route through Shavers Valley and Chuckwalla Valley. In the 1960s, the current Interstate Highway 10 was constructed along the old route of Highway 60. With the arrival of roads, settlement patterns changed from occasional miners' camps to roadside businesses serving travelers.

With the passage of the Homestead Act in 1862, vast areas of public land were opened up to private citizens, and agriculture became an economically important industry in California. Although much of the desert lands were poorly suited to farming, the Palo Verde Valley of the lower Colorado River was an exception. Thomas H. Blythe, who is known as "the father of the Palo Verde Valley," was the first to develop large tracts of land along the west bank of the Colorado River across from the established portage point at Ehrenberg, Arizona, near the present-day town of Blythe. Blythe died in 1883 before his development could be fully completed, but agricultural practices had already begun to take place and continued to be developed in the area. The town of Blythe was incorporated in 1916.

By the late 1920s, the Palo Verde Irrigation District Act was passed, and the region's irrigation and drainage needs were facilitated by one district. Farming continues to be a commercial industry in Blythe. On the Palo Verde Mesa, however, in the vicinity of the Project, agriculture was never a significant pursuit due to the poor soils and lack of readily accessible water. In the early 20th century, some ranching activities were attempted on the mesa.

In the 1930s, the Metropolitan Water District was created to effect transport of water from the Colorado River to Los Angeles. The Metropolitan Aqueduct was constructed from Parker Dam through the mountains east of Indio to Riverside, and finally, to Los Angeles. It was the largest construction project in the world at the time and provided jobs during the depression (Pittman, 1995).

The Project area falls within the limits of Gen. George S. Patton's World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), which was in operation from 1942 to

1944. The area was chosen by Patton to prepare troops for the harsh conditions and environment of combat for the North Africa Campaign. At 12 million acres, the DTC/C-AMA was the largest-ever military training center, stretching from west of Pomona, California, to Yuma, Arizona, and north into Nevada. The valley bordered by the Palen, Little Maria, and McCoy Mountains is considered one of the most extensive maneuver areas in the DTC/C-AMA. After two years in operation and the training of one million troops, the DTC/C-AMA was closed in 1944 as a result of the allied victory in North Africa and the need for trained troops elsewhere. Following the closure of the DTC/C-AMA, dismantling and salvage efforts began, and the land was ultimately returned to private and government holdings (Bischoff, 2000). The remains of the DTC/C-AMA areas consist of rock features; faint roads; structural features; concertina wire; tank tracks; footprints of runway and landing strips; large base camps such as those at Camp Rice, Coxcomb, and Young; foxholes and bivouacs; concrete defensive positions; refuse; and trails. The Blythe Army Airbase, a major military camp at the DTC/C-AMA, is located to the southeast of the Project.

3.5.1.6 Identified Cultural Resources

This subsection provides the results of cultural resource inventories conducted to identify cultural resources within the Project area, including literature and records searches (California Historical Resources Information System [CHRIS] and local records), archival research, Native American consultation, and field investigations. For purposes of this discussion, the Project area for NEPA is equivalent to the Area of Potential Effects (APE) under the NHPA. The regulations implementing NHPA §106 define the APE as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist.

Previous Research

CHRIS Records Search

With the intent of compiling information on known cultural resources and previously conducted cultural resources studies pertinent to the location of the Project, a records search was conducted for the Project and a 1-mile buffer around it on February 3, 2011 at the Eastern Information Center (EIC, part of CHRIS), located at the University of California, Riverside. The records and literature search results indicated that a total of 22 previous investigations had been conducted within a 1-mile radius of the study area (Appendix D, Table 1). These consist of 17 survey-level investigations, four regional overviews, and one impact study for a project. Of these, 10 are located within the Project area (Jordan and Tennyson, 2011).

The previous investigations identified 267 previously recorded cultural resources within a 1-mile radius of the Project. Of these, 46 cultural resources are located within the ROW application area. The remaining 221 previously recorded cultural resources are located within the 1-mile buffer zone. The majority of the sites identified are World War II-era military sites, small lithic scatters, and historic roads. These sites are primarily located in or within 1 mile of the linear facilities and were identified during archaeological studies conducted in support of the Blythe Solar Power Project (BSPP) to the immediate south (Jordan and Tennyson, 2011).

Several archaeological surveys were conducted in the general vicinity of the Project between 2006 and 2011. Portions of these surveys overlapped with the Project as currently designed, including the BSPP and several surveys for the CRS. Surveys for the BSPP were conducted by AECOM between 2009 and 2011. Surveys for the CRS were completed between 2006 and 2011 by ASM Affiliates, Applied Earthworks, and ICF Jones & Stokes. Also, survey work associated with the GSEP was conducted near the CRS (Jordan and Tennyson, 2011).

Types of archaeological sites that have been found during previous investigations of the general area within which the Project is located are described below (excerpted from Jordan and Tennyson, 2011). These site types are presented in order to provide examples of the types of archaeological resources that may be found in the region.

Prehistoric Site Types

The following discussion of the prehistoric site types of the Project area is excerpted from a study conducted by AECOM for the Project (Jordan and Tennyson, 2011).

Habitation Sites. Habitation sites are characterized by a wide variety of occupation debris and, occasionally, the remains of domestic architecture. These sites can contain living areas (see also rock rings and cleared circles, below), cooking hearths, subsistence remains (faunal bone and plant remains), midden deposits, and artifact scatters. Within the habitation site type, a range of subtypes exist, distinguished primarily by the intensity and longevity of the use of the site as a living space.

Habitation sites can range from very large, permanent villages occupied year-round by several families, to small, temporary camp sites occupied once for a matter of days or weeks. Even temporary habitation sites can contain discrete activity areas devoted to a variety of activities such as lithic reduction, milling, butchery, cooking, and other subsistence-related activities. Prehistoric habitation sites of any duration are unlikely on the Palo Verde Mesa, as there is no reliable water source nearby.

Quarries and Lithic Procurement Sites. In North America, stone tools of various kinds were some of the most important implements of daily life. Flaked stone tools were used to cut, scrape, chop, carve, and take down game animals. Groundstone tools were largely milling implements used to grind plant foods, medicinal herbs, and minerals. The manufacture of these tools required specific types of stone that was distributed unevenly across the landscape. Deposits of high-quality toolstone were mined repeatedly over centuries and even millennia. While some quarries were claimed by particular ethnic or family groups, most were used by a variety of groups with overlapping ranges.

Lithic raw material procurement sites can take the form of quarries where rock was dug and chiseled out of the ground, and free deposits of rock, typically transported and aggregated through water or glacial action. One quarry is located south of the Project area. Site CA-RIV-9792 is a quartz quarry located at the base of the McCoy Mountains that includes flakes, debitage, possible digging sticks, and trail segments (Vargas, 2010). There is also a stratum of clay that occurs below the topsoil. It can be seen in erosional cuts around the quartz deposits.

In the Project area, the long pebble terraces associated with the Pleistocene course of the Colorado River were frequented by prehistoric groups who used the river cobbles to create flaked stone tools of various types. Much of the initial work of removing the weathered outer cortex of the cobbles was completed where the cobbles were found on the pebble terraces. Thus, the pebble terraces contain clear evidence of their use for lithic raw material procurement and tool production.

Evidence of groundstone quarries and production sites has been found in the Palo Verde Hills (Apple et al., 2001), at Palo Verde Point (Johnson, 2001), in the Picacho Basin (Pendleton et al., 1986), and along the Colorado and Gila Rivers (Ezzo and Altschul, 1993; Schneider and Altschul, 2000). Boma Johnson's (2001 work suggests that there are large quarries in the Palo Verde Point area that were used for the manufacture of mano, metate, and pestle blanks. At temporary campsites and larger habitation sites, mobile groups often cached groundstone tools for use upon their return to the same locales.

Lithic Scatters and Flaking Stations. Lithic scatters and flaking stations can range from single-use flaking stations to large scatters that contain numerous flaking episodes with a light background scatter of debitage. Discrete flaking stations, where a single episode of lithic reduction occurred, often include cores and debitage, but rarely finished tools or useable flakes. When tools are found in lithic scatters, they are usually broken blanks from early in the manufacturing process, or expedient tools. The debitage in lithic scatters may be the result of various core and biface reduction technologies. Debitage size and character is often associated with the size of the parent material.

A lithic study in the nearby McCoy Wash included a detailed in-field analysis of reduction techniques as reconstructed from the preserved debitage and cores (Flenniken and Spencer, 2001). The researchers concluded that four discrete reduction technologies were represented in the wash, all of them apparently contemporaneous and directly related to the size and shape of the source materials chosen for reduction (Flenniken and Spencer, 2001:61). Although lithic scatters are generally interpreted by archaeologists as places where toolstone acquisition and tool manufacture occurred, Native American representatives have pointed out that certain ritual activities also result in the production of scatters of flaked stone materials (Altschul and Ezzo, 1994; Cachora, 1994).

Trails. Trails are generally tamped into stable surfaces, sometimes with larger gravel and pebbles pushed to the sides to form slight berms along the edges of the trail. In the desert, trails are typically found along the tops of ridge systems, on stable alluvial fans, on desert pavements, and in upland areas where they often disappear into washes. Prehistoric trails can follow washes for considerable distances. Several trails have been documented along the lower Colorado River where they are often associated with petroglyphs, ground figures, and cairns (Altschul and Ezzo, 1994; Cachora, 1994; Johnson, 1985; McGuire and Schiffer, 1982; Pendleton et al., 1986; Pigniolo et al., 1997; Rogers, 1939 Schaefer, 1994a; Schaefer, 1994b; Von Werlhof, 1987).

Ceramic Scatters and Pot Drops. "Ceramic scatter" refers to a dispersed surface distribution of ceramics, typically from multiple vessels. A "pot drop" is traditionally defined as a small, distinct concentration of sherds from a single vessel. As early as the 1930s, Malcolm Rogers recognized that shrines along trails and other ceremonially significant sites in the Colorado Desert frequently contain concentrations of prehistoric ceramics (Rogers, n.d.).

Cleared Circles. Cleared circles, sometimes referred to as “sleeping circles,” are commonly found throughout the regional study area. These are cleared areas in the desert pavement that are roughly circular in outline. Following Malcolm Rogers’ (1966 initial work, archaeologists have interpreted larger cleared circles as sleeping or resting places, and identified smaller ones as vision quest or meditation circles (Davis, 1980; Ezzo and Altschul, 1993 Pigniolo et al., 1997; Rogers, 1966; Von Werlhof and Von Werlhof, 1977). Habitation debris is rarely found in direct association with cleared circles (Rogers, 1966), and subsurface deposits at cleared circles in the Colorado Desert generally are very rare (Marmaduke and Dosh, 1994; Pendleton et al., 1986; Schaefer, 1986). Lorann Pendleton (1984 has suggested that some cleared circles lacking associated artifacts may be natural features created by wind action around creosote bushes.

Prehistoric Cairns. Within the Colorado Desert, prehistoric cairns are typically situated on stable surfaces. The cairns, which may be partially collapsed, are composed of multiple courses of dry-stacked rocks ranging from pebbles to small boulders. Prehistoric cairns are frequently found associated with trails or other prehistoric features. Researchers have also documented a number of human inhumations associated with cairns, most of which appear to date to the Archaic period (McDonald, 1992; Schaefer, 1994a).

Thermal Cobble Features. Thermal cobble features interpreted as the remains of roasting pits are occasionally found away from domestic debris as isolates or in groups. Roasting pits sometimes occur in association with natural stands of specific food resources, such as agave, pinyon nuts, and saltbush seeds. These plant foods were often harvested, processed, and roasted before consumption or transport to established habitation sites (Lightfoot and Parrish, 2009:347, 354). A roasting pit is a type of earth oven constructed by digging an oval to circular hole and lining it with vegetation or cobbles and small boulders. A fire may be built over the rocks to heat them before placing the plant food materials in the earth oven, or the foodstuffs may be placed directly on the cobbles and then covered with other materials (e.g., green plants, rocks, soil) before a fire is built over the entire feature.

The remains of roasting pits are typically 1 m to 3 m in diameter, roughly circular concentrations of fist-sized cobbles, most showing evidence of thermal alteration. These may be the in situ remains of earth ovens, or they may be “clean out” concentrations of stones removed from an oven to access the roasted foods within. Several examples of this site type were identified along the pebble terraces that bound the eastern side of the Project. Similar features, identified as “agave baking pits” were excavated by Steven Shackley (1984) approximately 140 miles southwest of the Project in the In-ko-pah Gorge area.

Petroglyphs. Petroglyphs are formed by removing, by various means, the varnish or weathered surface from boulders or bedrock outcrops. Considered ceremonial, petroglyphs in the Colorado Desert include anthropomorphic, zoomorphic, abstract, and geometric forms (Cleland and Apple, 2003 as cited in CEC, 2010; Ezzo and Altschul, 1993). Although single, isolated petroglyphs are occasionally found, petroglyphs usually occur clustered on rock faces forming panels, possibly with compositional significance.

Ground Figures – Geoglyphs and Rock Alignments. For the purposes of this study, two types of ground figures are recognized: geoglyphs and rock alignments. Both are considered to have ceremonial or ritual significance. Geoglyphs, sometimes referred to as intaglios, are lines and figures created through various means on stable ground surfaces (Harner, 1953 as cited in CEC, 2010; Johnson, 1985; Rogers, 1945). Geoglyphs may be formed through a deliberate subtractive process, or incidentally from repetitive motion upon the land.

In the Colorado Desert, geoglyphs are typically formed by removing the uppermost layer of desert pavement rocks and gravel, exposing the lighter colored soil beneath. The removed gravel is often pushed to the edge of the exposed surfaces, forming a low gravel berm around the geoglyph figure. Depending on the construction method and the degree of erosion, these berms can range from well-defined to ill-defined or nonexistent (Von Werlhof, 1987 as cited in CEC, 2010). Geoglyphs may alternatively be tamped into the desert pavement rather than incised. For example, tamped rings are features in which the pavement surface is compressed but not actually removed, possibly as a result of the repetitive movements involved in ritual circle dances (Johnson, 1985; Von Werlhof, 2004; Solari and Johnson, 1982 as cited in CEC, 2010).

Ground figures can also be formed by an additive process wherein cobbles and/or small boulders are arranged on the ground surface in various shapes and alignments (Johnson, 1985; Von Werlhof, 1987). For this Project, these additive ground features are referred to as “rock alignments.”

Cremations and Human Remains. All cultures maintain specific practices and profound beliefs concerning the treatment and disposition of the dead. For that reason, the disturbance of human remains is always a sensitive issue culturally, ethically, and legally. Traditionally, the Late Prehistoric and Proto-historic peoples of the Colorado River area practiced cremation, although other practices, including burial, are known archaeologically. In situ burials and cremations in the Colorado Desert are frequently associated with small collections of artifacts such as ceramics, lithic artifacts, basketry, faunal and botanical materials, and shell ornaments and beads. Very often, cremations and burials were placed in depressions or holes specifically dug for the purpose of interring the dead. For that reason, burials and cremations may be minimally evident or completely imperceptible on the present-day ground surface.

While relatively rare, sites with cremations or burials have been recorded in the Colorado Desert. Burials and cremations are more common in and near habitation sites, and relatively uncommon in non-habitation, resource procurement areas like the Palo Verde Mesa. Nevertheless, special circumstances and special individuals, such as shamans or suspected witches, sometimes necessitated burial far from habitation and in unexpected locales. Human remains are afforded special protection under federal and state law.

Historic Site Types

The following discussion of the historic site types of the Project area is excerpted from a study conducted by AECOM for the Project (Jordan and Tennyson, 2011).

Transportation Routes. Transportation routes consist of historical trails and roads. The condition of the roads may vary from faint two-tracks to graded or paved alignments where the route, not the road, is significant. Several unimproved roads run through and adjacent to the Project area, most associated with the initial survey of the land and the transport of goods and people to mining activities in the region. Most of these roads were likely also used during the WWII-era military training activities of the DTC/C-AMA.

Historic Camps. Temporary historical camps are found throughout the Colorado Desert. These camps often include features such as campfire/hearths and debris scatters, as well as rectangular cleared areas, often called "tent pads," that may have been cleared to create a more comfortable sleeping area for sleeping bags and tents. Specific types of temporary historical camps in the Project may include construction camps for linear facilities (railroads, transmission lines, water conveyance, etc.), mining camps, sheep-herding camps, and military camps and bivouacs.

Residential Structures and Features. Formal structures built of wood, stone, concrete, metal, and other materials are not common in the Palo Verde Mesa owing to the harsh environment, which inhibited homesteading. In the Project vicinity, one collection of stone and concrete structures with attendant features and refuse scatters is known along a road following a General Land Office (GLO) section line surveyed in 1917. Other types of historical structures and features include concrete foundations; structures and features built of milled lumber; and metal features, including well heads and pipelines.

Historic Cairns. Many of the rock piles within the Colorado Desert are associated with historical mining claims. These can vary in size and composition. Rarely, a can or other container in the cairn will contain information regarding the claim. In addition, some historical cairns in the Project may be related to the use of the area during WWII as part of the DTC/C-AMA, possibly as aerial markers for flight training or for the guidance of air support during simulated maneuvers.

Debris Scatters and Dumps. This feature type ranges from small discrete deposits to large debris concentrations. Often these are found along trails or roads, complicating temporal and cultural assignments. The Project is located within the former boundaries of the DTC/C-AMA, which was a large-scale military training facility during WWII. To the south of the Project is the Blythe Army Air Base, developed in its present form as an air support and heavy-aircraft training facility for the DTC/C-AMA. Debris scatters dating to the early 1940s, and particularly the period from 1942 to 1945, are likely representative of DTC/C-AMA activities, including ground maneuvers and aircraft training. Other debris scatters falling outside of this time period are likely associated with sporadic mining activities in the vicinity, as well as a few brief attempts to establish farms or ranches on the Palo Verde Mesa.

Refuse scatters from the later 20th century may represent a variety of activities that may be difficult to distinguish. From the end of WWII forward, the Palo Verde Mesa has supported limited mining and prospecting, farming and ranching, recreational activity, rock hunting on the pebble terraces (for prized multicolor cobbles), and a brief reoccupation of the area as part of Exercise Desert Strike, a joint Army/U.S. Air Force training maneuver in May 1964.

Emplacements. Within the APE and its vicinity, there are remnants of various landscape modifications likely associated with active battles during the training maneuvers of WWII and possibly 1964. Most appear to be fortified positions consisting of shallow dug-out depressions surrounded by low earthen berms and, occasionally, low walls of dry-stacked stones, usually including only a few emplacements in a small area. These are found most commonly in broken terrain, such as the water-cut bajada ridges along the western portion of the Project site, where some cover and concealment would have been provided by the natural terrain. In several sites in the Project boundary, 12 or more emplacements were recorded along natural drainage channels, suggesting that larger military operations/training took place in these areas.

Isolated Finds. Isolated finds consist of single, occasionally multiple, prehistoric or historical artifacts. Isolates have been found on a variety of surfaces, including desert pavement, gravel beds, and washes.

Secondary Deposits. Some of the Project site is located within or near ephemeral drainages. Over time, alluvial and Aeolian actions have caused intact cultural deposits to be redistributed from their primary depositional locations. This phenomenon has been observed near the current Project site (see Keller, 2010; Tennyson and Apple, 2010; Vargas, 2010). Due to their secondary nature, the resources often retain little more than generalized temporal information, and offer little in terms of context. Many times, deposits from several depositional episodes become intermixed with one another, further confusing contextual, chronological, and diagnostic data about the site.

Archival and Library Research

A review of historic maps was conducted to identify architectural resources. No architectural resources were identified within 0.5 mile of the Project site. A review of resources within 0.5 mile of the linear facilities did not identify any additional resources beyond what was previously recorded for the BSPP (Jordan and Tennyson, 2011).

Historic maps on file at California State University Chico and the University of Alabama were referenced online. No structures are evident in the vicinity of the Project site on any historical maps. BLM references include GLO plat maps of the Project site, desert land entries, and various survey reports. Report information was provided to AECOM during archival research for the BSPP (Keller, 2010, as cited in Jordan and Tennyson, 2011). Much of that data is relevant to the Project as well, and was reviewed for the Project (Jordan and Tennyson, 2011).

Native American Coordination

Native Americans in the Colorado Desert maintain strong traditional ties to the land and to the cultural resources that have been left by their ancestors. AECOM contacted the California Native American Heritage Commission (NAHC) for a list of local Native Americans who might have concerns about the Project area. This effort was in addition to the government-to-government consultation between the BLM and the Tribes, which is described in Section 5.2.2. A search of the Sacred Lands File was also requested to determine whether there were any known places of traditional importance in the vicinity of the Project. The NAHC responded with a list of individuals and organizations potentially interested in the Project (see Appendix D, Table 2). No TCPs were identified in the Sacred Lands File, and no TCPs have been identified by tribes to date.

AECOM sent letters in November 2011 to each individual on the NAHC contact list for the purpose of providing information about the Project, to solicit guidance about the scope and content of the environmental information to be included in the PA/EIS, and to invite the tribes' participation in the environmental review process. Following the letters, phone calls were made to each individual on the list to ensure receipt of the letter and to record any comments or concerns that individual wished to share over the phone. Individuals to whom letters were sent, and responses received to date, are shown in Appendix D, Tables 2 and 3.

Individuals from the following tribes were contacted:

1. Agua Caliente Band of Cahuilla Indians
2. Augustine Band of Cahuilla Indians
3. Cabazon Band of Mission Indians
4. Cahuilla Band of Mission Indians
5. Chemehuevi Indian Tribe
6. Cocopah Indian Tribe
7. Fort Mojave Indian Tribe
8. Fort Yuma Quechan Indian Nation
9. Morongo Band of Cahuilla Mission Indians
10. Ramona Band of Cahuilla Mission Indians
11. San Manual Band of Serrano Mission Indians
12. Santa Rosa Band of Cahuilla Indians
13. Torres-Martinez Desert Cahuilla Indians

Field Inventory Investigations

Between March 8 and May 5, 2011, and on November 9, 2011, project archaeologists conducted a Class III pedestrian survey of 6,321 acres including the 4,792-acre APE (Jordan and Tennyson, 2011). The Class III survey was an intensive pedestrian survey designed to identify cultural resources to the extent possible on the basis of surface observations. The survey was conducted by four- to eight-person survey teams, each led by a qualified crew chief. A maximum survey interval of 15 meters was employed. When archaeological sites were encountered, the survey crews determined the location of the site using sub-meter global positioning system (GPS) units, and then flagged and mapped the location. After the initial pedestrian survey phase, resource-recording teams returned to the identified sites to record resources in greater detail. For the Project, four or more artifacts within a 30-meter-square area were considered an archaeological site. Isolated single artifacts and collections of three or fewer artifacts that were separated from other cultural materials by more than 30 meters were recorded as isolated finds, or isolates. The survey crews also attempted to relocate previously recorded resources.

Recorded resources were identified as prehistoric, historic, multi-component (containing both prehistoric and historic cultural resources), or undetermined (sites whose temporal age could not be identified at the time of recordation).

A total of 114 archaeological sites (20 prehistoric, 79 historic-period, 9 multi-component, and 6 of undetermined age) and 167 isolated artifacts were identified within the ROW application area. A total of 101 of these archaeological sites (see Appendix D, Table 4) and 116 of the isolates were identified within the APE. Of these, nine archaeological sites have been determined eligible for the

NRHP. These include six historic archaeological sites associated with the DTC/C-AMA, and three prehistoric archaeological sites. Isolated finds are generally not considered eligible for listing in the NRHP.

The majority of the sites and isolates identified in the APE are historical in age and consist predominantly of metal cans, with smaller quantities of glass bottles and jars, milled lumber, broken ceramics, and sundry metal items. Historical features include survey markers, rock features, prospect pits, cleared areas, emplacements, debris scatters, and tank tracks associated with the WWII-era use of the Project vicinity as part of the DTC/C-AMA. Six of the historic period sites (CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246) have been determined eligible for the NRHP under Criterion A for significant values associated with events important in history (the DTC/C-AMA) and Criterion D for their ability to provide important information in history.

Prehistoric cultural materials identified in the APE include flaked stone tools and debitage, tested cobbles, ceramic sherds, and thermal cobble features. Three prehistoric archaeological sites (CA-RIV-2846, CA-RIV-3419, and CA-RIV-10222) have been determined eligible for the NRHP under Criterion D for their potential to yield significant scientific information about prehistory of the area. Table 3.5-1 describes these sites.

TABLE 3.5-1
ARCHAEOLOGICAL SITES DETERMINED ELIGIBLE FOR THE NRHP WITHIN THE APE

Site Number	Site Type	NRHP Criteria
CA-RIV-10225	Historic debris scatter (DTC/C-AMA)	A, D
CA-RIV-10194	Historic military camp site, historic debris scatter (DTC/C-AMA)	A, D
CA-RIV-10222	Prehistoric ceramic scatter	D
CA-RIV-10240	Historic military debris scatter, tank tracks (DTC/C-AMA)	A, D
CA-RIV-10242	Historic military debris scatter, tank tracks, ground features/emplacements (DTC/C-AMA)	A, D
CA-RIV-10245	Historic military maneuver area, tank tracks, ground features/emplacements (DTC/C-AMA)	A, D
CA-RIV-10246	Historic military maneuver area, tank tracks, ground features/emplacements (DTC/C-AMA)	A, D
CA-RIV-2846	Prehistoric quarry	D
CA-RIV-3419	Prehistoric flaked stone scatters and other features	D

The distribution of artifacts across the APE shows that few archaeological resources were identified in the southwestern and eastern portions of the Project site. This may be a result of flooding events that have taken place over time. The area in question has deep washes, suggesting that a high volume of water has the potential to move through the area. There is also evidence of flooding from the McCoy Wash near the eastern edge of the Project site and beyond the surveyed area. Archaeological resources in the area have likely been displaced by these flooding events.

Landscape-level studies

As required by mitigation measures implemented for previous solar energy developments in the vicinity of the Project, landscape-level studies of two groups of interrelated cultural resources are underway in the Colorado Desert. One study focuses on cultural resources associated with a prehistoric trails network, and the other focuses on cultural resources associated with the DTC-C/AMA historic district, as described below:

> **Prehistoric trails network.** During Late Prehistoric and ethnohistoric times, an extensive network of Native American trails was present in the Colorado Desert. Segments of many trails are still visible, connecting natural and cultural elements of the landscape such as springs and rock art sites. Trails, cairns, geoglyphs, cleared circles, rock rings, rock art sites and artifact scatters can be seen across the landscape. The ongoing prehistoric trails network study focuses on the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected. These loci included springs and other water sources, food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, and petroglyphs).

> **DTC-C/AMA historic district.** The goal of this study is to identify the remains of the WWII military training activities that were conducted across the entire region as described in 3.5.1.5 and 3.5.1.6. The DTC-C/AMA is a NRHP-eligible historic district that has been previously nominated for listing on the NRHP. The period of significance for the district is 1942 to 1944. Archaeological resources associated with the district consist primarily of refuse scatters and dumps, with some fortified positions, cleared areas, tank tracks, and possible tent camps. These sites are important for their association with General George S. Patton and for their ability to contribute to an understanding of how American soldiers were trained during WWII. Six NRHP-eligible archaeological sites (CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246) within the APE are associated with the DTC-C/AMA.

Survey for Built-Environment Resources

No architectural resources were identified in the solar plant portion of the APE. For the proposed linear facilities, previous studies had encompassed the entire 0.5-mile Architectural Survey Area (Meiser, 2009 as cited in Jordan and Tennyson, 2011). Two resources are either in or within 0.5 mile of the proposed gen-tie line and access road ROW. The first is a buried water pipeline that crosses the ROW and was previously determined eligible for the NRHP as a contributing element of the Blythe Army Air Base, portions of which are eligible for the NRHP (Meiser, 2009 as cited in Jordan and Tennyson, 2011). The second is a radio facility south of I-10 that is within 0.5 mile of the ROW. The radio facility is not eligible for the NRHP (Meiser, 2009 as cited in Jordan and Tennyson, 2011) and would therefore not be subject to adverse direct or indirect effects from the Project.

Geoarchaeological Investigations

A geoarchaeological study conducted for the Project determined that the proposed Project area is underlain by late Pleistocene and Holocene-age alluvial fan, valley fill, fluvial wash, and eolian deposits that are separated by age and depositional regimes. The conclusion of the geoarchaeological research is that Holocene-age deposits are known to contain surface and buried archaeological deposits near the Project area. Other Holocene-age deposits, such as dry washes and eolian deposits, also have a high potential for surface and buried archaeological deposits. Late Pleistocene deposits, as well as the older fluvial deposits, have a high potential for surface archaeological deposits, a medium to high potential for shallow subsurface deposits, and a low potential for deep subsurface deposits. Bedrock units within the Project are very unlikely to contain buried archaeological materials (Dietler et al., 2011 as cited in Jordan and Tennyson, 2011).

3.5.2 Applicable Regulations, Plans, and Standards

3.5.2.1 Federal

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include NEPA, the NHPA, the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), Executive Order 13007, and the Antiquities Act. The following is a discussion of the most pertinent laws affecting the proposed Project.

National Environmental Policy Act

This law establishes national policy for the protection and enhancement of the environment. Part of the function of the federal government in protecting the environment is to “preserve important historic, cultural and natural aspects of our national heritage.” The act is implemented by CEQ regulations (40 CFR Parts 1500-1508). A procedural statute, the Act provides for public participation in the consideration of cultural resource issues, among others, during agency decision making (BLM, 2004).

National Historic Preservation Act

The principal federal law addressing historic properties is the NHPA, as amended (16 USC §470f), and its implementing regulations (36 CFR Part 800). Section 106 of the NHPA requires a federal agency with jurisdiction over a proposed federal action (referred to as an “undertaking” under the NHPA) to take into account the effects of the undertaking on historic properties, and to provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. The Project is an undertaking with the potential to affect historic properties (36 CFR §800.3(a)), and therefore is subject to compliance with the requirements of the §106 process.

The term “historic properties” refers to “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP]” (36 CFR §800.16(*l*)(1)). The implementing regulations (36 CFR Part 800) describe the process for identifying and evaluating historic properties, for assessing the potential adverse effects of federal undertakings on historic properties, and seeking to develop measures to avoid, minimize, or mitigate adverse effects. The steps of the §106 process must be accomplished through consulting with the State Historic Preservation Office (SHPO), Indian tribes, local governments, and other interested parties. The agency also must provide an opportunity for public involvement. Consultation with

Indian tribes regarding issues related to §106 of the NHPA, as well as other authorities like NEPA, must recognize the government-to-government relationship between the Federal government and Indian tribes. (See Section 5.2.2, *Tribal Consultation for the Project*).

In order to be eligible for the NRHP, historic properties are generally, but not always, at least 50 years old, must retain integrity, and must meet at least one of the four criteria listed below. Integrity is the property's ability to convey its demonstrated historical significance through location, design, setting, materials, workmanship, feeling, and association. The four eligibility criteria set forth in 36 CFR §60.4 are as follows:

A. Association with events that have made a significant contribution to the broad patterns of history;

B. Association with the lives of persons significant in the past;

C. Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Resources that have yielded or may be likely to yield information important in prehistory or history.

Section 106 of the NHPA sets forth the procedures for identifying and evaluating historic properties and assessing the effects of federal undertakings on those historic properties through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties. The goal of consultation is to identify potentially affected historic properties, assess effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties. Historic properties are not required to be formally listed on the NRHP. As part of the §106 process, agencies are required to consult with the SHPO. The §106 process does not require the preservation of historic properties; instead, it is a procedural requirement mandating that federal agencies take into account effects to historic properties from an undertaking prior to approval.

American Indian Religious Freedom Act

AIRFA establishes a policy of federal protection for traditional American Indian religious freedoms. It seeks to correct federal policies and practices that could (a) deny access to sacred sites required in traditional religions, (b) prohibit use and possession of sacred objects necessary for religious ceremonies, and (c) intrude upon or interfere with religious ceremonies. The BLM complies with AIRFA by obtaining and considering the views of traditional religious practitioners as part of the NEPA and NHPA compliance process.

Executive Order 13007

Executive Order 13007 directs federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It requires federal agencies to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. Executive Order 13007 reinforces the purposes expressed in AIRFA. The BLM complies with Executive Order 13007 by consulting with tribal governments and Indian religious practitioners as part of the NEPA and NHPA compliance process.

Native American Graves Protection and Repatriation Act

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the NAGPRA (Public Law 101-601) and its implementing regulations found at 43 CFR Part 10. If human remains or associated funerary objects are discovered on public lands within the Project area, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of the discovered remains, including transfer of custody.

3.5.2.2 State

California Register of Historical Resources

The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code (PRC) §5024.1[a]).

To be eligible for the CRHR, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria, which are based upon NRHP criteria (PRC §5024.1[b]):

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the CRHR must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the NRHP, but it may still be eligible for listing in the CRHR.

Additionally, the CRHR consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The CRHR automatically includes the following:

1. California properties listed on the NRHP and those formally determined eligible for the NRHP;
2. California Registered Historical Landmarks from No. 770 onward; and,
3. Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the CRHR.

Other resources that may be nominated to the CRHR include:

1. Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the NRHP, the CRHR, and/or a local jurisdiction register);
2. Individual historical resources;
3. Historical resources contributing to historic districts; and,
4. Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

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3.6 Environmental Justice

This section provides an overview of the applicable policies, regulations, and existing conditions for environmental justice, or ". . . the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (BLM, 2005). The study area is defined by the boundaries of several planning areas for which demographic data are available and which encompass the potential affected area for environmental justice, including communities within a 2-hour travel radius centered on the Project site. Data on minority populations, low income populations, and Indian Tribes who may be impacted by the proposed Project are provided these planning areas, including Riverside County, La Paz County, and the City of Blythe.

3.6.1 Environmental Setting

The Project site is located in Chuckwalla Census County Division (CCD) (a county subdivision defined by the U.S. Census) in eastern Riverside County, approximately 13 miles northwest of the City of Blythe. The site and its immediately adjoining areas are vacant, with no existing population. For reference, data on minority populations and incidence of poverty are provided for Riverside County, Chuckwalla CCD, Blythe CCD, City of Blythe, La Paz County (Arizona), and Colorado River Indian Reservation (located in both Arizona and California). Chuckwalla CCD and Blythe CCD together correspond generally to "Eastern Riverside County," as defined in the Riverside County General Plan (Riverside County, 2003).

Chuckwalla CCD is a sparsely populated, rural area of Riverside County, bordered by Coachella Valley to the west and Blythe CCD and the Colorado River (also the California-Arizona border) to the east. Its largest population center consists of two state prisons (Ironwood and Chuckawalla Valley State Prisons), which have been annexed to the City of Blythe, and its largest non-institutional community is Desert Center, located approximately 35 miles west of the Project site. Blythe CCD includes the City of Blythe, community of Ripley, and the surrounding agricultural areas, but excludes the two state prisons.

La Paz County in Arizona is located east of Blythe CCD. Its largest cities are Parker and Quartzsite; the community of Ehrenberg is also located in the county, 4 miles east of Blythe and across the Colorado River. Colorado River Indian Reservation is located mostly in La Paz County and partly in Riverside County. The Reservation extends along the river north of Ehrenberg and includes the City of Parker. Although most of the Reservation would be unaffected by the Project, demographic and income data have been included, since sections of the Reservation are located in Blythe CCD.

3.6.1.1 Minority Populations

According to the CEQ, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997).[1]

Table 3.6-1 presents the minority population composition of the planning areas surrounding the Project site, based on the 2010 Census. Data are provided for Riverside County, Census tract (CT) 469 (which forms the main part of Chuckwalla CCD and includes the communities of Mesa Verde and Nicholls Warm Springs, south of the Blythe Airport), CT 9810 (which represents the two state prisons), Blythe CCD, City of Blythe, La Paz County (AZ), and Colorado River Indian Reservation (located mostly in La Paz County). Minority population, defined as racial or ethnic groups other than non-Hispanic White, represents from 37.3 percent of total population in La Paz County to 81.5 percent in CT 9810. Minorities represent 57.3 percent of the total population in CT 469, the planning area in which the Project site is located. This is close to the proportion of minority population in Riverside County as a whole, which is 60.3 percent. Thus, in all planning areas around the Project site, with the exception of La Paz County, minority populations exceed 50 percent of total population.

Hispanic and Latino populations comprise the majorities of minority populations in these areas, ranging from 52.3 percent in CT 469 to 54.3 percent in Blythe CCD. For Riverside County as a whole, Hispanic and Latino population represents 45.5 percent of total population, and in La Paz County, 23.5 percent.

3.6.1.2 Low-Income Populations

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of how many low-income individuals it takes to comprise a low-income population. In the absence of guidance, for this analysis the density used to identify minority populations (i.e., 50 percent or greater) was also used as a minimum to identify low-income populations. In addition, a local population is judged to be "meaningfully greater" than the general population if the proportion of individuals living under the poverty line is 150 percent or more than that of the general population.

For this analysis, proportions of people living in poverty were obtained from the 2009 and 2010 American Community Survey, as available (U.S. Census Bureau, 2009, 2010a). The U.S. Census Bureau defines poverty using standards set by the U.S. Office of Management and Budget's Statistical Policy Directive 14 (U.S. Office of Management and Budget, 1978; U.S. Census Bureau, 2011a). Family income is compared to thresholds that vary according to family size, age, and number of children under 18 years old. If a family's total income is less than the applicable threshold, then every person in the family is considered to be in poverty. Poverty thresholds are the same for all geographic areas and are adjusted annually by the Consumer Price Index. The U.S. Census Bureau does not define poverty status for institutionalized persons and others living in group quarters.

1 According to the CEQ guidelines, "Minority" is defined as all persons except non-Hispanic whites. In other words, minority is defined as all racial groups other than white, and all persons of Hispanic origin, regardless of race.

TABLE 3.6-1
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE STUDY AREA

	Riverside County, CA	CT 469[a]	CT 9810[b]	Blythe CCD, CA[c]	Blythe City, CA[d]	La Paz County, AZ[e]	Colorado River Indian Reserva-tion, AZ-CA[f]
Total Population	2,189,641	2,043	7,634	15,045	20,817	20,489	8,764
Hispanic or Latino (All Races)	45.5%	52.3%	51.6%	54.3%	53.2%	23.5%	34.6%
Non-Hispanic							
White	39.7%	42.7%	18.5%	34.2%	28.3%	62.7%	37.6%
Black or African American	6.0%	1.7%	26.0%	7.7%	14.5%	0.6%	0.7%
American Indian and Alaska Native	0.5%	0.6%	0.9%	0.6%	0.7%	10.7%	23.6%
Asian	5.8%	0.6%	0.7%	1.6%	1.4%	0.4%	0.4%
Native Hawaiian and Other Pacific Islander	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
Some Other Race	0.2%	0.2%	2.0%	0.0%	0.8%	0.1%	0.0%
Two or More Races	2.2%	1.9%	0.1%	1.4%	1.0%	2.0%	3.0%
Percent Minority (Other Than Non-Hispanic White)	60.3%	57.3%	81.5%	65.8%	71.7%	37.3%	62.4%
Percent of People Below Poverty Level	16.3%	26.2%[g]	n.a.[h]	20.4%	13.6%	19.1%	25.6%

NOTE: All population, race, and ethnicity data are from 2010 Census; data on poverty level from American Community Survey (most recent data, as applicable).

[a] Rural areas of Chuckwalla Valley CCD; excludes state prisons and Colorado River Indian Reservation.
[b] Census tract covers Ironwood and Chuckawalla Valley State Prisons only.
[c] Formerly Palo Verde CCD; excludes state prisons.
[d] Incorporated Blythe city; includes Ironwood and Chuckawalla Valley state prisons.
[e] Includes the part of Colorado River Indian Reservation that is located in Arizona.
[f] Includes portions of California and Arizona.
[g] Poverty data for Chuckwalla Valley CCD (formerly Chuckwalla CCD) as a whole, excludes institutionalized persons.
[h] The American Community Survey (ACS) does not define poverty for institutionalized persons.

SOURCE: U.S. Census Bureau, 2009, 2010a, 2010b.

In 2010, the poverty threshold for a single person under 65 years of age was $11,344 and for a person 65 years and over was $10,458. For a four-person family with two children under 18 years of age, the poverty threshold was $22,113. Other thresholds are defined for different family sizes and compositions (U.S. Census Bureau, 2011b).

As shown in Table 3.6-1, 26.2 percent of all persons in CT 469 belonged to families with income below the poverty level (U.S. Census Bureau, 2009). This was the highest proportion among planning areas examined for this analysis. By comparison, 20.4 percent of total population in Blythe CCD belonged to families with income below the poverty level, 13.6 percent in the City of Blythe (excluding institutionalized persons), 16.3 percent in Riverside County, 19.1 percent in La Paz County (AZ), and 25.6 percent in Colorado River Indian Reservation. Accordingly, no planning area in the vicinity of the Project site had a poverty rate exceeding 50 percent.

3.6.2 Applicable Regulations, Plans, and Standards

3.6.2.1 Federal

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance.

Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 FR 7629). The order requires the USEPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The CEQ has oversight responsibility for the Federal Government's compliance with Executive Order 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ's "Environmental Justice Guidance Under the National Environmental Policy Act," agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects (CEQ, 1997).

BLM Land Use Planning Handbook, H-1601-1, Appendix D, Section IV (Environmental Justice Requirements) provides guidance for assessing potential impacts on population, housing, and employment as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These variables were not evaluated in this analysis, as they are cannot be readily quantified for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

3.6.2.2 State

No state regulations, plans, or standards related to environmental justice would be applicable to the MSEP.

3.7 Geology and Soils Resources

This section describes the existing geology, soil conditions, and seismicity in the Project area in terms of local topography, geology, soil resources, and regional seismicity. This section also identifies local geologic and seismic hazards that could potentially affect structures associated with the Project. The study area relevant to geology, soils and geologic hazards is the physical footprint of Project construction, operation and maintenance, and decommissioning. The study area relevant to faulting and seismic hazards is the broader southern California region, because distant faults can produce ground shaking and secondary seismic hazards at the Project site. Regulations, plans, and policies including federal and state laws related to geologic and seismic considerations that may be relevant to the proposed action are also discussed.

3.7.1 Environmental Setting

3.7.1.1 Regional Geology

The Project site is located in the southeastern portion of the Mojave Desert geomorphic province (California Geological Survey [CGS], 2002). The Mojave Desert is a broad interior region of isolated mountain ranges that separate vast expanses of desert plains and interior drainage basins. To the west, the boundaries of the geomorphic province are marked by major mountain ranges (e.g., the Sierra Nevada and Transverse ranges) and regional faults (e.g., the Garlock Fault and the San Andreas Fault). To the east, the Colorado River has carved out a flood plain that marks the boundary between California and Arizona.

3.7.1.2 Local Geology

The Project site is located atop the Palo Verde Mesa, which is an alluvial-filled basin bounded by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively (United States Geological Survey [USGS], 2006). To the southeast, the mesa rises above the Palo Verde Valley, which is formed by flood plain deposits of the Colorado River (USGS, 2006). The Project site slopes gently downward in a generally southeasterly direction at an approximate gradient of less than 1 percent. The elevation of the solar plant site varies from 210 meters above mean sea level (amsl) in the west to 140 meters amsl in the east.

The Project site is underlain by younger and older Quaternary age alluvial fan deposits (USGS, 2006). Figure 3.7-1 illustrates the geologic units underlying the Project site, which are denoted by italicized symbols in the text below. These deposits consist of loose sedimentary material that has been shed from the Palen-McCoy Mountains over the course of the Quaternary period (up to 1.8 million years ago). The age of the deposits are determined based on how recently the land surface has undergone active sediment build up through periodic flooding and sediment deposition. The older alluvial fan deposits (Qa_3, *Qpv*), located on the western side of the solar plant site, are distinguished from younger alluvial fan deposits based on the extent to which modern washes have dissected (i.e., down-cut) the ground surface, and the presence of smooth, varnished desert pavement (USGS, 2006). Younger alluvial fan deposits (Qa_6), which underlie the eastern portion of the solar plant site, are characterized by evidence of recent sediment transport and the presence finer-grained silt, sand and gravel deposits (USGS, 2006). In several locations along the gen-tie line, modern washes (*Qw*) and wind-blown sand dunes (*Qs*) composed of cohesionless silts and sands intersect the Project site. In general, sedimentary deposits underlying the Palo Verde Mesa become increasingly fine-grained toward the center axis of the valley, and coarse-grained closer to base of the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains. To the south of the Project solar plant and to the east of the gen-tie line, an old Pleistocene- to Pliocene-age sedimentary unit (*QTmw*) crops out above the Palo Verde Mesa, forming a series subdued topographic knolls aligned in a northeast direction (USGS, 2006). The local stratigraphy is presented in Table 3.7-1.

TABLE 3.7-1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS IN THE PROJECT VICINITY

Age	Unit/Description	Map Symbol	Project Facility
Holocene	Alluvium of modern washes	Qw	Gen-tie Line, Access Road
	Eolian Sand	Qs	Gen-tie Line
	Alluvial-fan and alluvial-valley deposits	Qa_6	Unit 1, Unit 2, Gen-tie Line, Access Road, Distribution Line
Holocene ± Pleistocene	Alluvial-fan deposits (Intermediate Alluvium)	Qa_3	Unit 1, Unit 2, Gen-tie Line, Access Road, Distribution Line
Pleistocene	Alluvial deposits of Palo Verde Mesa	Qpv	Gen-tie Line, Access Road, Distribution Line
Pleistocene ± Pliocene	Alluvial deposits of the McCoy Wash area	QTmw	Access Road, Distribution Line
Pleistocene ± Miocene	Alluvial-fan and alluvial-valley deposits (Older Alluvium)	QTa_2	None[a]
Cretaceous and Jurassic	McCoy Mountains Formation	Km*(x)*[b]	None[a]

NOTES:

[a] Not mapped at the surface within the Project area but may be present at depth below the alluvial-filled basin.
[b] The McCoy Mountains formation has numerous sub-units that are not distinguished in this table.

SOURCE: USGS, 2006

3.7.1.3 Soils

The National Resource Conservation Service (NRCS) is the leading source for soil surveys that detail soil characteristics of an area. Soil units described by the NRCS are classified via a 2nd order survey at a scale of 1:20,000 with delineations of 1.5 to 10 acres. Soil survey maps are normally obtained from the NRCS's Geographic Database (United States Department of Agriculture [USDA], 2009); however, this area has not been included in their dataset. Therefore, the California Soil Resource Lab (CSRL) database was used to assess the Project site in conjunction with a historic University of California and USDA 1922 soils map (Tetra Tech EC, Inc., 2011). Both maps depict soils that are generally gravelly loams and sandy loams derived from the upland McCoy Mountain Mesozoic sedimentary and metasedimentary rocks. CSRL indicated that the two soil units underlying the Project solar plant site are the Cheriano-Hyder-Cipriano complex (65 percent) and the Gunight-Rillito-Chuckwalla (35 percent) (Figure 3.7-2). The gen-tie corridor crosses both of these two units in addition to the southerly Aco-Rositas-Carrizo complex and the Rositas-Carsitas-Dune land complex. Soil grades from gravelly and coarser alluvial sediments near the McCoy Mountains to finer and sandy alluvial sediments with increasing distance away from the mountains; in addition, Project soils have severe limitations that make them unsuitable for cultivation (Tetra Tech EC, Inc., 2011). Table 3.7-2 summarizes the soil units within the Project area.

TABLE 3.7-2
SOIL UNITS IN PROJECT AREA

Soil Name	Description
Gunsight-Rillito-Chuckawalla	The Gunsight-Rillito-Chuckwalla series consists of very gravelly loam to gravelly sandy loam to very gravelly silt loam formed in mixed alluvium. Soils are considered somewhat excessively drained, shrink swell potential is low, and soils are considered prime farmland if irrigated. Runoff characteristics vary based on individual soil units, but range from very low to high in Gunsight soils, slow to medium in Rilito soils, and moderate in Chuckawalla soils.
Cheriono-Hyder-Cipriano	The Cheriono-Hyder-Cipriano series consists of gravelly fine to sandy loam formed in fan alluvium. Soils are considered somewhat excessively drained, shrink swell potential is low, and soils are considered prime farmland if irrigated. Runoff characteristics vary based on individual soil units, but range from low to very high in Cipriano soils, high in Hyder soils, and medium to rapid in Cheriono soils.
Aco-Rositas-Carrizo	The Aco-Rositas-Carrizo series consists of gravelly sand to sandy loam to fine sand in fan remnants and eolian sands. Soils are considered somewhat excessively drained, shrink swell potential is low, and soils re considered prime farmland if irrigated. Runoff characteristics are considered low in all three soil units.
Rositas-Carsitas-Dune	The Rositas-Carsitas-Dune series consists of gravelly sand to fine sand in fan remnants, valley fill, and eolian sandy material. Soils are considered somewhat excessively drained, shrink swell potential is low, and soils are considered prime farmland if irrigated. Runoff characteristics are considered low in all three soil units.

SOURCE: Tetra Tech EC, Inc., 2011

The western portion of the Project area is located at the base of the McCoy Mountains. Much of the area includes well-developed desert pavement that is cut by deep alluvial channels trending generally from northwest to southeast. Most of the pavements consist of basalt with outcrops of quartz eroding from the McCoy Mountains. The drainages that bisect this ridge are shallow at the western edge of the Project and get progressively deeper as they continue eastward down the slopes at the base of the McCoy Mountains.

3.7.1.4 Geologic Hazards

The Project is located in a moderately active geologic area of southeastern California within the eastern Mojave Desert geomorphic province. This discussion presents the existing geologic hazards in the region of the Project.

Faulting and Seismicity

The Project site is not crossed by any known active faults[1] or designated Alquist-Priolo Earthquake Fault Zones (CGS, 2002). The closest active faults to the Project are (in order of increasing distance) the Coachella Valley section of the San Andreas Fault, the Brawley Seismic Zone, the Pinto Mountains Fault Zone, and the Mesquite Lake Fault. All of these active faults are located 58 miles or more to the west of the Project site (CGS, 2010). The closest potentially active fault[2] is the Aztec Mine Wash Fault, located approximately 30 miles southeast of the Project site (CGS, 2010).

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered most likely along active faults.

As discussed above there are no active or potentially active faults are mapped within the Project site (CGS, 2010), with the closest active fault zoned under the Alquist-Priolo Special Studies Zone Act being approximately 58 miles from the Project site (CGS, 2002). Therefore, the potential for surface fault rupture within the Project site is low.

Ground Shaking

Terminology and Concepts

Generally, the greater the earthquake magnitude and the closer the fault rupture to a site, the greater the intensity of ground shaking. The amplitude and frequency of ground shaking are related to the size of an earthquake, the distance from the causative fault, the type of fault (e.g., strike-slip), and the response of the geologic materials at the site. Ground shaking can be described in terms of acceleration, velocity, and displacement of the ground.

A common measure of ground motion during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g. hard bedrock, soft sediments, or artificial fills).

The primary tool that seismologists use to describe ground shaking hazard is a probabilistic seismic hazard assessment (PSHA). The PSHA for the State of California takes into consideration the range of possible earthquake sources and estimates their characteristic magnitudes to generate a

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1 According to the CGS, an active fault is defined as a fault that has had surface displacement during Holocene time (last 11,000 years).

2 A potentially active fault is a Quaternary-age (last 1.8 million years) fault that lacks evidence of Holocene-age displacement.

probability map for ground shaking. The PSHA maps depict values of PGA that have a 10 percent probability of being exceeded in 50 years. Use of this probability level allows engineers to design structures to withstand ground motions that have a 90 percent chance of not occurring in the next 50 years, making buildings safer than if they were merely designed for the most probable events.

The Modified Mercalli (MM) Intensity Scale (Table 3.7-3) assigns an intensity value based on the observed effects of ground-shaking produced by an earthquake. Unlike measures of earthquake magnitude, the MM intensity scale is qualitative in nature (i.e. it is based on actual observed effects rather than measured values). MM intensity values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, and the type of geologic material. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Because the MM Intensity Scale is a measure of ground-shaking effects, intensity values can be related to a range of PGA values, also shown in Table 3.7-3.

Ground Shaking Potential on the Project Site

As discussed above, the Project site is located over 58 miles from the closest active faults in the region. Relative to the more seismically active areas to the west and northwest, the Project site will experience lower levels of shaking less frequently (CGS, 2008). According to PSHA for the State of California, the Project site has a 10 percent probability of exceeding a PGA value of 0.129 over the next 50 years (CGS, 2003). This PGA corresponds to a MMI value of VI, which is most commonly associated with a moderate shaking severity (CGS, 2008). Such an earthquake would be strong enough to be felt widely by the public, but unlikely to cause substantial damage beyond moving or toppling of unsecured equipment, cracks in plaster, and/or damage to older masonry buildings (CGS, 2008). Buildings and structures built according to modern construction codes are unlikely to sustain appreciable damage in such an earthquake. There is a low probability that the site could be subject to a higher severity of ground shaking, for example, if a large earthquake occurs on a potentially active or previously unknown fault closer to the Project site. However, the PGA value for the site given by the PSHA for California represents a conservative estimate of ground shaking levels that can be reasonably anticipated for the purposes of designing and constructing buildings. There is a 90 percent chance PGAs experienced on the Project site over the next 50 years will be less than 0.129g.

Secondary Earthquake Hazards

Liquefaction

Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of a sudden increase in pore water pressure caused by an earthquake. This typically occurs near the surface in poorly consolidated, highly saturated, well-sorted, and finer-grained materials (Tetra Tech EC, Inc., 2011). The potential for liquefaction in strata deeper than approximately 40 feet is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy. Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope; that is, a nearby steep hillside or deeply eroded stream bank. Other factors such as distance

**TABLE 3.7-3
MODIFIED MERCALLI INTENSITY SCALE**

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017-0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017-0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035 – 0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092 – 0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18 – 0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34 – 0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65 – 1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

NOTES:

[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2010

from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading.

Soils underlying the Project site have a low susceptibility to liquefaction because they are composed of poorly sorted, coarse grained material, and the water table is typically found at a depth of greater than 100 feet below ground level (California Department of Water Resources [DWR], 2010 as cited in Tetra Tech EC, Inc., 2011). Given these conditions and the low likelihood of strong ground shaking at Project site, the potential for the site to experience earthquake-induced liquefaction is low (CGS, 2008).

Settlement

Earthquake-induced settlement of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume as the soil grains tend to rearrange into a more dense state. This decrease in volume and consolidation of soil can result in the settlement of overlying structural improvements. Because the Project site is underlain by unconsolidated alluvial fan deposits consisting primarily of loose gravel and sand, the nature of the soils coupled with the variation in density among strata indicate that earthquake-induced soil settlement could occur.

Landslides

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Slope stability can depend on several complex variables, including the geology, structure, and the amount of groundwater present, as well as external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslides typically occur within slide-prone geologic units that contain excessive amounts of water or are located on steep slopes, or where planes of weakness are parallel to the slope angle. Landslide potential at the Project site is low since the Project site is located on the broad, gently southeast-sloping alluvial fan and alluvial valley deposits of the Palo Verde Mesa.

Subsidence and Settlement

Potential hazards in the study area include subsidence, settlement, and earthquake-induced settlement (discussed above). Subsidence of the land surface is a general process that can be attributed to natural phenomena, such as tectonic deformation, consolidation, hydrocompaction, collapse of underground cavities, oxidation of organic-rich soils, or rapid sedimentation, and also by the activities of man, such as the withdrawal of groundwater. Local subsidence or settlement may also occur when areas containing compressible soils are subjected to foundation or fill loads.

The Riverside County Land Information System (RCLIS) indicates the alluvial-filled basin sediments in the Palo Verde Mesa are susceptible to subsidence[3] (Riverside County, 2011). Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the weight per unit volume of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. As discussed in Section 3.11, Mineral Resources, petroleum and natural gas withdrawal do not occur within the vicinity of the Project site. Potential subsidence impacts are limited to groundwater drawdown. The EIS prepared for the Blythe Solar Power Project (BSPP), the approved project adjacent to the Project's southern boundary, concluded that no regional subsidence due to the historic groundwater withdrawal has been reported in the vicinity of the BSPP (BLM, 2010). This includes localized or regional subsidence during the 1980's and 1990's, when regional groundwater extraction was at its historic maximum of approximately 48,000 AFY in the general area (BLM, 2010).

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when water infiltration dissolves the weak cementation that is preventing the immediate collapse of the soil structure. The depositional environment of the Palo Verde Mesa suggests that the soils within the Project area may be subjected to hydrocompaction. However, local conditions across the Project site may vary and specific information regarding the susceptibility of soils to hydrocompaction would be evaluated based exploratory borings and soils tests to be performed as part of the Project-specific geotechnical investigation discussed in Section 4.7, *Geology and Soils*.

Expansive Soils

Expansion and contraction of expansive soils in response to changes in moisture content can cause movements that result in damage and/or distress to structures and equipment with shallow foundations. Issues with expansive soils occur near the ground surface where changes in moisture content typically occur. Often, grading, site preparations, and backfill operations associated with subsurface structures can eliminate the potential for expansion. The addition of moisture from irrigation, capillary tension, water line breaks, etc. causes the clay soils to collect water molecules in their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements. As depicted in Table 3.7-2, the soils encountered within the Project site are primarily granular soils that exhibit a low shrink / swell potential and do not have expansive properties. However, local conditions across the Project site may vary and specific information regarding the expansive properties of site soils would be evaluated based exploratory borings and soils tests to be performed as part of the Project-specific geotechnical investigation discussed in Section 4.7, *Geology and Soils*.

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[3] The Palo Verde Mesa is considered 'susceptible to subsidence' on an RCLIS susceptibility map. This indicates that the area contains suitable conditions for subsidence, not that it has or will occur.

Corrosive Soils

Corrosivity refers to potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils. The rate of corrosion is related to factors such as soil moisture, particle-size distribution, and the chemical composition and electrical conductivity of the soil. Fine grain soils with high in-situ moisture contents that contain sulfides can be corrosive to buried metal pipe, which can lead to premature pipe failure and leaking.

Erosion

Erosion is a natural process whereby soil and highly weathered rock materials are worn away and transported to another area, most commonly by wind or water. Natural rates of erosion can vary depending on slope, soil type, and vegetative cover (regional erosion rates are also dependant on tectonics and changes in relative sea level). Soils containing high amounts of silt are typically more easily eroded, while coarse-grained (sand and gravel) soils are generally less susceptible to erosion. The Project site would be located in an area that is presently drained by sheet flow and desert washes (see Section 3.20.1.3 for additional information on surface water hydrology). Low frequency, high intensity monsoonal storms in the region can result in high rates of surface water runoff within the vicinity of the Project site. The runoff characteristics of each soil unit underlying the Project site are described in Table 3.7-2. Natural rates of runoff from soils on the Project site are highly variable, ranging from low to very high. Maps compiled by Riverside County indicate soils within the Project site have a 'high' wind erodibility rating along the gen-tie line to a 'moderate' wind erodibility rating on the Project solar plant site (LSA, 2000).

Due to the dry climate and infrequent nature of precipitation events, wind is arguably the prevailing erosion process acting on the study area. Wind can move soil particles by three general processes: surface creep (rolling along the ground surface), saltation (a bouncing movement along the ground surface caused by particle collisions that help force a particle into the air for a brief time before it falls back to the ground), and suspension transport (particles lofted into the air and remaining suspended for more than a minute). Surface creep and saltation typically account for most soil mass movement associated with wind erosion, and normally involve larger sand-size soil particles. Suspension transport normally involves smaller silt and clay size soil particles.

The extent of fugitive dust generated by wind erosion is affected by numerous factors, including:

1. Soil texture (the mix of clay, silt, and sand sized particles in a soil);
2. Particle aggregation (mostly due to clay content);
3. Organic matter content of soils;
4. Non-erodible surface features (gravel, rocks, boulders, rock outcrops, etc.);
5. Extent and density of vegetation cover;
6. Surface crusting – mineral or biological crusts – especially between vegetation stems;
7. Soil moisture conditions;
8. Wind speed;

9. Vertical air turbulence;
10. Sedimentation of erodible material from upslope water erosion or from flood deposits; and
11. Active disturbance of surface soils.

Soil moisture conditions and surface conditions are important factors determining the vulnerability of an area to wind erosion. In desert areas, soil moisture levels are high only during and after rainfall or flash flood events. Consequently, soil moisture levels in desert areas are high enough to influence wind erosion processes for only brief intermittent periods. The surface features of greatest importance are non-erodible surface material, vegetation cover, mineralized soil crusts, and biological soil crusts. The most common types of non-erodible surface materials in deserts include scattered rocks and boulders, rock formation outcrops, and desert pavement. Desert pavements are areas with rock fragments of pebble to cobble size that cover an underlying layer of sand, silt, or clay. Desert pavement areas typically have little or no vegetation cover. The extent to which desert pavement reduces wind erosion and resulting fugitive dust depends on the density of the rock fragments covering the underlying soil.

Soil erosion can become problematic when human intervention causes rapid soil loss and the development of erosional features (such as incised channels, rills, and gullies) that undermine roads, buildings, or utilities. Vegetation clearing and earth-moving reduces soil structure and cohesion, resulting in abnormally high rates of erosion, referred to as *accelerated erosion.* This typically occurs during construction activity involving grading and soil moving activities (i.e., presence of soil stockpiles, earthen berms, etc.) that loosen soils and makes them more susceptible to wind and water erosion. Further, the operation of associated heavy machinery and vehicles over access roads, staging areas, and work areas can compact soils and decrease their capacity to absorb runoff, resulting in rills, gullies, and excessive sediment transport. The effect of the Project on natural drainage and erosion rates in the area is described in Section 4.7, *Geology and Soils*.

3.7.2 Applicable Regulations, Plans, and Standards

3.7.2.1 Federal

International Building Code

The 2009 International Building Code (IBC) is a model building code developed by the International Code Council that sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings in the United States. As a model building code, the IBC has no legal status until it is adopted or adapted by government regulation. California has adopted the IBC. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health and welfare insofar as they are affected by building construction and to secure safety to life and property from all hazards incident to the occupancy of buildings, structures and premises. With some exceptions, the CBC discussed below is based on the IBC.

Federal Land Policy and Management Act

FLPMA establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, and archaeological values and air, atmospheric, and water resources. FLPMA is also charged with the protection of life and safety from natural hazards.

California Desert Conservation Area Plan

The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the Project site. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

3.7.2.2 State

California Building Code

The CBC, which is codified in Title 24 CCR Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction.

The 2010 CBC is based on the 2009 IBC. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site, and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) signed into law in December of 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Fault Zoning Act is to regulate development on or near active fault traces to reduce the hazard of potential fault rupture and to prohibit the location of most structures for human occupancy[4] across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart and Bryant, 2007). The Project is not subject to this act because it is not within an earthquake fault zone. Nevertheless, this act is included in the regulatory framework because it requires the State of California to identify and disseminate information about the location of earthquake fault zones, which is considered relevant to the environmental setting.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate "zones of required investigation" (i.e., seismic hazard zones) where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements. The act requires cities, counties, and other local permitting agencies to regulate certain development projects by implementing the provisions of the act through various local building codes, permits, and ordinances. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design, consistent with CGS Special Publication 117, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. Because the CGS has not established seismic hazard zones for the Project area, the Applicant is not required to comply with the evaluation and mitigation guidelines. Nevertheless, this act is included in the regulatory framework because it requires the State of California to identify and disseminate information about seismic hazards, which is considered relevant to the environmental setting.

[4] A structure for human occupancy is defined as any structure used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year (14 CCR §3601).

3.8 Greenhouse Gas Emissions and Global Climate Change

This section provides an overview of the environmental and regulatory setting with respect to greenhouse gas (GHG) emissions and global climate change. A brief overview of climate change is followed by a discussion of the various GHGs that have been identified as drivers of climate change, and pertinent regulations, including those relevant at federal and state levels.

3.8.1 Environmental Setting

3.8.1.1 Climate Change

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Some of the potential effects of global warming in California may include loss of snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large wildfires, and more drought years (ARB, 2009). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. According to the International Panel on Climate Change (IPCC), the projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

1. Higher maximum temperatures and more hot days over nearly all land areas;
2. Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
3. Reduced diurnal temperature range over most land areas;
4. Increase of heat index over land areas; and
5. More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

ARB estimated that in 2008, California produced 478 million gross metric tons of carbon dioxide-equivalent (CO_2e) emissions. ARB found that transportation was the source of 37 percent of the state's GHG emissions; followed by electricity generation at 24 percent, and industrial sources at 19 percent (ARB, 2010).

3.8.1.2 Greenhouse Gases

Generation of electricity can produce GHGs in addition to the criteria air pollutants that have been traditionally regulated under the federal and state CAAs. For traditional sources of electricity, such as fossil fuel-fired power plants, GHG emissions include primarily carbon dioxide (CO_2), with much smaller amounts of nitrous oxide (N_2O), and methane (CH_4; often from unburned natural gas). Other sources of GHG emissions include sulfur hexafluoride (SF_6) from high voltage power equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. Because these different GHGs have different warming potential (i.e., the amount of heat trapped by a certain mass of a GHG), and CO_2 is the most common reference gas for climate change, GHG emissions often are quantified and reported as CO_2 equivalents (CO_2e). For example, SF_6, while representing a small fraction of the total GHGs emitted annually worldwide, is a very potent GHG with 23,900 times the global warming potential of CO_2. Therefore, an emission of one metric ton of SF_6 would be reported as an emission of 23,900 metric tons CO_2e. Large emission sources are reported in million metric tons[1] of CO_2e.

GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels. Other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds that have very high global warming potentials. These air pollutants are considered to be GHGs because their presence in the atmosphere results in increased solar absorbance, and/or prevents heat from the surface of the Earth from escaping to space. The principal GHGs resulting from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide (CO_2)

CO_2 is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic sources. Key anthropogenic sources include: the burning of fossil fuels (e.g., oil, natural gas, coal, etc.); solid waste; trees, wood products, and other biomass; and industrially relevant chemical reactions such as those associated with manufacturing cement. CO_2 is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4)

Like CO_2, CH_4 is emitted from both natural and anthropogenic sources. Key anthropogenic sources of CH_4 include gaseous emissions from landfills, releases associated with mining and materials extraction industries, in particular coal mining, and fugitive releases associated with the extraction and transport of natural gas and crude oil. CH_4 emissions also result from livestock and agricultural practices. Small quantities of CH_4 are released during fossil fuel combustion.

Nitrous Oxide (N_2O)

N_2O is also emitted from both natural and anthropogenic sources. Important anthropogenic source activities include industrial activities, agricultural activities (primarily application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

1 A metric ton is 1,000 kilograms; it is equal to approximately 1.1 U.S. tons and approximately 2,204.6 pounds.

Fluorinated Gases

HFCs, PFCs, and SF_6 are synthetic gases that are emitted from a variety of industrial processes and contribute substantially more to the greenhouse effect than the GHGs described previously. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in small quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.

Greenhouse Gas Sources

Anthropogenic GHG emissions in the United States derive mostly from the combustion of fossil fuels for transportation and power production. Energy-related CO_2 emissions, resulting from fossil fuel exploration and use, account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. More than half of the energy-related emissions come from large stationary sources such as power plants; approximately a third derive from transportation; while industrial processes, agriculture, forestry, other land uses, and waste management compose a majority of the remaining of sources (USEPA, 2011a).

In California, renewable electricity sources have been given preference over fossil fuel fired electricity sources. This means that when renewable energy is available on the grid, the California Independent Systems Operator (CAISO) requests turndown of fossil power production. When the renewable facility goes off-line, if there is still demand, the CAISO requests turnup of fossil power production. Some fossil fuel load-following plants will adjust automatically as renewable sources come on- and off-line. As a result of these operating scenarios, new renewable energy power plants operating in California offset the production of electricity from fossil fuel fired power plants.

Existing Greenhouse Gas Emissions at the Project Site

No industrial, residential, or other emitters of GHGs are currently located or operating at the Project site. There are no other existing on-site operations that result in the combustion of fossil fuel, or otherwise result in direct anthropogenic emissions of GHGs on-site. There is, however, existing vegetation located on-site, and this vegetation is expected to provide ongoing natural carbon uptake. Wohlfahrt et al. (2008) completed an evaluation of carbon uptake by natural vegetation in Mojave Desert systems. The study indicates that desert plant communities may result in the uptake of carbon in amounts as high as 102 to 110 grams per square meter per year; however, the study showed a high degree of uncertainty around these amounts. This analysis assumes that on-site vegetation could uptake as much as 100 grams per square meter per year as a conservative estimate. Under existing conditions, this would equate to a natural carbon uptake, expressed in CO_2, of approximately 1.48 metric tons of CO_2 per acre per year.

3.8.2 Applicable Regulations, Plans, and Standards

3.8.2.1 Federal

U.S. Environmental Protection Agency

On April 2, 2007, in *Massachusetts v. EPA*, 549 US 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the CAA. The Court held that the USEPA must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the USEPA is required to follow the language of §202(a) of the CAA. The Supreme Court decision resulted from a petition for rulemaking under §202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the USEPA Administrator signed proposed endangerment and cause or contribute findings for GHGs under §202(a) of the CAA. The USEPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia, and Seattle, Washington. The USEPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings.

The USEPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under CAA §202(a) (USEPA, 2011b).

Specific GHG Regulations that the USEPA has adopted to date are as follows:

> ***40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule.*** This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (USEPA, 2011c). The Project would not trigger GHG reporting as required by this regulation.
>
> ***40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule.*** USEPA recently mandated to apply Prevention of Significant Deterioration (PSD) and Title V requirements to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year (USEPA, 2011b). The Project would not trigger PSD or Title V permitting under this regulation.

Order No. 3289

On September 14, 2009, Secretary of the Interior Ken Salazar issued Secretarial Order No. 3289, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The Order establishes an approach for increasing understanding of climate change and responding to potential climate change related impacts as relevant to the resources that the

Department of the Interior (DOI) manages. The document specifically identifies potential impact areas including potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species, and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI (including BLM) to consider and analyze potential climate change impacts when undertaking long range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under DOI's purview.

3.8.2.2 State

There are a variety of statewide rules and regulations which have been implemented or are in development in California that mandate the quantification or reduction of GHGs.

Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS) was established in 2002 by SB 1078, and the initial standard has since been accelerated through a number of executive and legislative actions, the most recent of which are described below. The RPS program currently requires investor-owned utilities, electric service providers, and community choice aggregators to procure 33 percent of electricity from eligible renewable energy resources by 2020. The program is jointly implemented by the CPUC and CEC.

Executive Order S-3-05

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006, and establishes statewide emission reduction targets through the year 2050:

1. by 2010, reduce GHG emissions to 2000 levels;
2. by 2020, reduce GHG emissions to 1990 levels; and
3. by 2050, reduce GHG emissions to 80 percent below 1990 levels.

This Executive Order does not include any specific requirements that pertain to the Project. However, future actions taken by the state to implement these goals may affect the Project, depending on the specific implementation measures that are developed.

Executive Order S-14-08

Executive Order S-14-08 was established by Governor Arnold Schwarzenegger in November 2008. Executive Order S-14-08 improves processes for licensing renewable projects by directing state agencies to create comprehensive plans to prioritize regional renewable projects based on an area's renewable resource potential and the level of protection for plant and animal habitat. To implement and track the progress of the Executive Order, the CEC and CDFG signed a Memorandum of Understanding formalizing a Renewable Energy Action Team which will concurrently review permit applications filed at the state level to streamline the application process for renewable energy development. The specifics of this executive order include the following:

1. Requires retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020;

2. Requires various state agencies to streamline processes for the approval of new renewable energy facilities and determine priority renewable energy zones; and

3. Establishes the requirement for the creation and adoption of the Desert Renewable Energy Conservation Plan (DRECP) process for the Mojave and Colorado Desert regions.

This Executive Order does not include any specific requirements that pertain directly to the MSEP. However, the MSEP, as a renewable energy project, would help the utility contracting the power from this Project to meet the established RPS standard. Senate Bill 2, enacted in 2011, codifies the requirement of 33 percent renewable electricity sources by 2020.

Senate Bill 1368

SB 1368 was enacted in 2006, and required the CPUC to establish a CO_2 emissions standard for base load generation owned by or under long-term contract with publicly owned utilities. The CPUC established a GHG Emissions Performance Standard of 1,100 pounds of CO_2 per megawatt-hour (MWh). SB 1368 also requires the posting of notices of public deliberations by publicly owned companies on the CPUC website and establishes a process to determine compliance with the Emissions Performance Standard. The Project, as a renewable energy generation facility, is determined by rule to comply with the GHG Emission Performance Standard requirements of SB 1368.

Assembly Bill 32

California Assembly Bill (AB) 32, *the Global Warming Solutions Act of 2006*, requires ARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. AB 32 required ARB to adopt regulations by January 1, 2008, that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and ARB is authorized to enforce compliance with the program. Under AB 32, ARB also was required to adopt, by January 1, 2008, a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. ARB established this limit in December 2007 at 427 million metric tons of CO_2e. This is approximately 30 percent below forecasted “business-as-usual” emissions of 596 million metric tons of CO_2e in 2020, and about 10 percent below average annual GHG emissions during the period of 2002 through 2004 (ARB, 2009).

By January 1, 2011, ARB was required to adopt rules and regulations (to be implemented by January 1, 2012), to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 permits the use of market-based compliance mechanisms to achieve those reductions. AB 32 also requires ARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts.

In June 2007, ARB directed staff to pursue 37 early strategies for reducing GHG emissions under AB 32. The broad spectrum of strategies that were developed, including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate GHG reductions, and green ports, reflects that the serious threat of climate change requires action as soon as possible.

In addition to approving the 37 GHG reduction strategies, ARB directed staff to further evaluate early action recommendations made at its June 2007 meeting, and to report back to ARB within 6 months. The general sentiment of ARB suggested a desire to try to pursue greater GHG emissions reductions in California in the near-term. Since the June 2007 ARB hearing, ARB staff has evaluated all 48 recommendations submitted by stakeholders and several internally generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in September 2007 (ARB, 2007). ARB adopted nine Early Action Measures for implementation, including Ship Electrification at Ports, Reduction of High Global-Warming-Potential Gases in Consumer Products, Heavy-Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic Efficiency), Reduction of Perfluorocarbons from Semiconductor Manufacturing, Improved Landfill Gas Capture, Reduction of Hydroflourocarbon-134a from Do-It-Yourself Motor Vehicle Servicing, Sulfur Hexafluoride Reductions from the Non-Electric Sector, a Tire Inflation Program, and a Low Carbon Fuel Standard.

Climate Change Scoping Plan

In December 2008, ARB approved the AB 32 Scoping Plan outlining the state's strategy to achieve the 2020 GHG emissions limit (ARB, 2009). This Scoping Plan, developed by ARB in coordination with the Climate Action Team, proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The measures in the Scoping Plan will continue to be developed over the next year and are scheduled to be in place by 2013. The Scoping Plan expands the list of the nine Early Action Measures into a list of 39 Recommended Actions contained in Appendices C and E of the Scoping Plan. The measures relevant to the Project include T-7, Heavy Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency; E-3, Renewables Portfolio Standard; and H-6, High GWP Reductions from Stationary Sources.

17 CCR §95350 et seq.

The purpose of this regulation is to achieve GHG emission reductions by reducing SF_6 emissions from gas-insulated switchgear. Gas-insulated switchgear owners must not exceed maximum allowable annual emissions rates, which are reduced each year until 2020, after which annual emissions must not exceed 1.0 percent. Owners must regularly inventory gas-insulated switchgear equipment and measure quantities of SF_6 and maintain records of these for at least 3 years. Additionally, by June 1, 2012, and June 1 of each year thereafter, each gas-insulated switchgear owner must submit an annual report to the Executive Officer for emissions that occurred during the previous calendar year.

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3.9 Hazards and Hazardous Materials

The following discussion addresses existing environmental conditions in the affected area of the proposed MSEP site, and describes existing laws and regulations relevant to public health and safety. The affected environment for public health and safety includes evaluation of several program areas, including aircraft operations, hazardous materials, and public health. The affected environment related to geologic and seismic hazards is discussed in Section 3.7, *Geology and Soils*. The affected environment related to abandoned mine lands, unexploded ordnance, and electric and magnetic field (EMF) exposure is discussed in Section 3.22, *Additional NEPA Considerations*.

3.9.1 Environmental Setting

3.9.1.1 Aircraft Operations

The Blythe Municipal Airport is located 6 miles west of Blythe; the MSEP site is located about 4 miles northwest of the airport. The airport is owned by Riverside County and is open to the public. The airport has two operating runways, Runway 8-26 (oriented east-west), the primary runway, is 6,562 feet long, 150 feet wide. Runway 17-35 (oriented north-south) is 5,820 feet long, 100 feet wide (Riverside County Airport Land Use Commission [ALUC], 2004). The Blythe Airport is used for general aviation, i.e., flights other than military and regularly scheduled airline service and cargo flights. The 2001 Airport Master Plan estimated a total of 15 based aircraft in 1999. Five aircraft are based on the field and the airport averaged 69 aircraft operations per day for the 12-month period ending May 2010 (Air Nav, 2011).

The Riverside County ALUC adopts Airport Land Use Compatibility Plans (ALUCPs) for the areas surrounding the airports within its jurisdiction (Airport Influence Areas) to protect the public from the adverse effects of aircraft noise, ensure that facilities and people are not concentrated in areas susceptible to aircraft accidents, and ensure that no structures or activities adversely affect or encroach upon the use of navigable airspace (Riverside County ALUC, 2012). The Riverside County ALUC adopted an ALUCP for the Blythe Municipal Airport in 2004. The ALUCP is based on the Airport Master Plan adopted by the Riverside County Board of Supervisors in 2001. The ALUCP envisions a future long-range activity level of 58,100 annual aircraft operations including up to 2,200 airline aircraft operations (which could ultimately include large jet transport aircraft operations), consistent with the Airport Master Plan forecast. The Airport Master Plan also anticipates a 3,450-foot westward extension of Runway 8-26, resulting in a total length of 10,012 feet (Riverside County ALUC, 2004).

The airport influence area boundary for the Blythe Airport is measured from a point 200 feet beyond where the runways end (14 CFR Part 77), and includes Zones A, B1, B2, C, D, and E. The ALUCP identifies allowable and prohibited uses within each of these zones. Table 3.9-1 summarizes the compatible and potentially compatible land uses by Zone for electrical substations, power plants, and power lines. Power lines are listed as “potentially compatible with restrictions” in Zones B1, B2, C, and D. However, Table 3.9-1 addresses generalized situations regarding the placement of a power line.

TABLE 3.9-1
COMPATIBLE LAND USES BY ZONE

Component	Zone A	Zone B1	Zone B2	Zone C	Zone D	Zone E
Electrical Substations	-	0	0	0	0	+
Power Plants	-	-	-	0	0	+
Power Lines	-	0	0	0	0	+

NOTES:
- Generally Incompatible
0 Potentially compatible with restrictions
+ Generally Compatible

SOURCE: Riverside County ALUC, 2005a

The ALUCP notes that in Zones B1 and B2, airspace review is required for proposed structures greater than 35 feet in height; in Zone C, such review is required for structures taller than 70 feet; and in Zones D and E, such review is required for structures taller than 150 feet. These are generalized concepts. The provisions of Part 77 of the FAA Regulations govern whether a proposed project requires the submittal of Form 7460-1 to the FAA for preparation of an aeronautical study. Portions of a transmission line that are not in an Airport Influence Area still could potentially be subject to FAA review through the Form 7460-1 process if within 20,000 feet of a runway, especially if located at a higher elevation than the runway. Land uses that create hazards to air navigation are prohibited in all Airport Land Use Compatibility Zones. Such hazards include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land uses that may increase the attraction of birds to the area are also prohibited (Riverside County ALUC, 2005b). Potential hazards to aviation from solar energy projects located in sufficient proximity to airports include potential electromagnetic interference from the power plant and transmission lines, potential glare from the PV panels used to collect solar energy, and bird attraction from ponds.

3.9.1.2 Hazardous Materials

Existing Environmental Site Contamination

The Phase I Environmental Site Assessment conducted for the Project site in 2011 found no "Recognized Environmental Conditions" per the ASTM definition (Tetra Tech EC, Inc., 2011). This means that there was no evidence of any releases of hazardous substances or petroleum products on the Project site or in the immediate vicinity based on records searches and visual surveys. De minimis conditions identified during the site reconnaissance included utility lines, trash, and a pit with a wooden shaft (a potential former well). The following utility lines were observed: a potentially active high-pressure gas line trending north-south across the MSEP site about 20 to 50 feet west of Black Creek Road, and an east-west trending buried communication line and high-pressure gas pipeline and an overhead transmission line, both on the southern side of I-10, crossing the proposed gen-tie line. Scattered trash and debris were observed in the gen-tie line corridor, particularly near I-10, that could include lead debris from shooting target practice. A former well, identified in the records search, was not observed at its exact known location;

however, a pit with a collapsed wood-buttressed shaft and debris was observed nearby. In addition, above-ground storage tanks were identified outside of the MSEP boundary at a transient mobile home compound located to the south of the proposed gen-tie line and access road route.

The Project site is located within General Patton's World War II Desert Training Center opened by the Army Ground Forces in 1942. In 1943 it was renamed California-Arizona Maneuver Area (CAMA). The CAMA was the largest military training center ever established, stretching from west of Pomona, California, to Yuma, Arizona, and north to Nevada, encompassing approximately 12 million acres. Seven camps were set up in the CAMA for divisional use and for combat and supply units. The camps were widely spaced to prevent groups from interfering with each other during training exercises, but all were interconnected with a network of railroad lines and roads. After the camps closed in 1944, efforts began to salvage material and dismantle the sites. The land was returned to private and government holdings (Tetra Tech EC, Inc., 2011).

The former Blythe Army Airfield is located adjacent to the south of the BSPP site, approximately 6 miles due west of Blythe on West Hobson Way, adjacent to I-10. The airfield has been open since 1940, when it was known as Bishop Army Airfield. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base. The airfield was a second Army Air Forces heavy bombardment crew training base during World War II. Multiple bombardment groups were active at the airfield in 1942 and 1943, and up to 75 B-17 bombers were flown and maintained at this site. Historical records and drawings indicate that bombs and explosive materials, and possibly incendiary and pyrotechnic materials, were stored on airfield grounds in up to five magazines or bunkers. A gunnery range, skeet range, and jeep type target range, all with ammunition storage, were constructed and used by Army personnel (California State Military Museum, 2008).

Based on this historic military use, in addition to the potential for lead debris described above, other metals may be present in soils on the Project site due to the potential presence of munitions and related debris. Additionally, the possible use of incendiary and pyrotechnic materials on-site may have resulted in the presence of perchlorates in soils (DTSC, 2005).

Although not considered a "Recognized Environmental Condition" according to ASTM guidance, an additional environmental concern at the Project site is the potential presence of unexploded ordnance due to its use as a military practice area during the World War II era (Tetra Tech EC, Inc., 2011). The affected environment related to unexploded ordnance is discussed further in Section 3.22, *Additional NEPA Considerations*.

Pesticide Use

Pesticides are used to control living organisms that cause damage or economic loss, or that transmit or cause disease. Pests include insects, fungi, weeds, rodents, nematodes, algae, viruses, and bacteria. Pesticides include herbicides, fungicides, insecticides, rodenticides, and disinfectants, as well as insect growth regulators. In California, adjuvants (substances added to enhance the efficacy of a pesticide) also are subject to the regulations that control pesticides. The amount of pesticides applied in Riverside County increased from 1,787,288 pounds in 2009 to

2,339,739 pounds in 2010. Riverside County is currently the 18th highest pesticide user of the state's 58 counties (California Department of Pesticide Regulation, 2011). Based on historical information and existing conditions identified in the Phase I Environmental Site Assessment (Tetra Tech EC, Inc., 2011), the MSEP site has not been used for agriculture and therefore would not have been subject to pesticide applications.

3.9.1.3 Emergency Response

The Office of Emergency Services maintains two fully functional emergency operations centers in the cities of Riverside and Indio for coordination of response and recovery to extraordinary emergencies and disasters affecting Riverside County. The Riverside County Operational Area Emergency Operations Plan (RCFD, 2006) addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting Riverside County and establishes the framework for coordinating various Riverside County departments and other agencies in their emergency response activities.

The 2010 California Fire Code and 2010 CBC regulate and govern the safeguard of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials, and devices and from conditions hazardous to life or property in the occupancy of buildings and premises. Accordingly, emergency services access roads must be installed and made serviceable prior to and during the time of construction. The grade of the fire department access road must be within the limits established by the Fire Chief and may not exceed 15 percent.

3.9.1.4 Public Health

Location of Exposed Populations and Sensitive Receptors

The general population includes sensitive subgroups that could be at greater risk from exposure to hazardous materials or emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. However, there are no sensitive receptors in the immediate vicinity of the MSEP site. The nearest sensitive receptors are a residence off Black Creek Road, approximately 2.7 miles south of the site boundary, and a residence near 7th Avenue that is approximately 2.6 miles to the southeast. In addition, there are several residences that would be within 1 mile of the proposed gen-tie line, the closest of which is south of I-10 at a distance of approximately 0.6 mile. The nearest school is located approximately 7 miles from the MSEP site.

Existing Public Health Concerns

Analyses of existing public health issues typically are prepared in order to identify the current status of respiratory diseases (including asthma), cancer, and general health in the population located near proposed action sites to provide a basis on which to evaluate any additional health impacts from the proposed action. Because of the very low population in the immediate vicinity of the MSEP and because no data regarding existing health concerns specific to the local area was located, a detailed analysis of existing public health issues has not been conducted. Instead, statistics related to the public health status of Riverside County residents were obtained through database searches of the California Health Interview Survey (CHIS) conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Public Health (CDPH) and the Department of Health Care Services (CDHCS). Survey results reported comparable health status of Riverside County residents as compared with California as a whole. The following County incidence rates as compared to statewide numbers (in parentheses) were reported: cancer 11.5 percent (8.7 percent), lung disease 3.1 percent (2 percent), heart disease 5.2 percent (5.9 percent) and asthma 51.1 percent (58.5 percent) (CHIS, 2005, 2009).

Vector-Borne Diseases

Mosquitoes and other arthropods are known to be carriers of many serious diseases. Arthropod-borne viruses ("arboviruses") are viruses that are transmitted by blood-feeding arthropods, such as mosquitoes and ticks, when they bite susceptible humans and animals. There are four main virus agents of encephalitis in the United States: eastern equine encephalitis, western equine encephalitis, St. Louis encephalitis, and La Cross encephalitis, all of which are transmitted by mosquitoes. Most human infections are asymptomatic or result in nonspecific flu-like symptoms such as fever, headache, nausea, and tiredness. However, infection may lead to encephalitis, an inflammation of the brain, with a fatal outcome or permanent neurologic damage in a small proportion of infected persons. West Nile Virus (WNV) is closely related to the SLE virus and causes similar symptoms.

Of these diseases, only the WNV was reported in California in 2011. Six cases of WNV were reported in Riverside County and 144 cases were reported in the state during 2011 (USGS, 2011).

Valley Fever

Coccidioidomycosis, commonly known as Valley Fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley Fever is caused by the fungus Coccidioides, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. These fungal spores become airborne when the soil is disturbed by winds, construction, farming, and other activities. In susceptible people and animals, infection occurs when a spore is inhaled. Valley Fever symptoms generally occur within 3 weeks of exposure. Valley Fever is not a contagious disease, and secondary infections are rare.

It is estimated that more than 4 million people live in areas where Valley Fever fungus is prevalent in the soils. According to the CDPH, between 2001 and 2010, Riverside County has an incidence rate for Valley Fever of 1.5 to 3.8 cases per 100,000 people, which is relatively low compared to the higher incidence rate in counties such as Kern County, which had an incidence rate of 73 to 227 cases per 100,000 people over the same time period (CDPH, 2011).

People working in certain occupations such as construction, agriculture, and archaeology have an increased risk of exposure and disease because these jobs result in the disturbance of soils where fungal spores are found. Valley Fever infection is highest in California from June to November. In addition, many domestic and native animals are susceptible to the disease, including dogs, horses, cattle, coyotes, rodents, bats, and snakes. Most Valley Fever cases are very mild. It is estimated that 60 percent or more of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention.

3.9.1.5 Intentionally Destructive Acts

The number and high profile of international and domestic terrorist attacks during the last decade presents a new and realistic threat to the safety and security of the people of the U.S., infrastructure, and resources. There is a potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage; therefore, related analysis generally focuses on the consequences of such events. In general, the consequences of a sabotage or terrorist attack on a solar facility would be expected to be similar to accidental and natural events that could result in an interruption of power service, fire, or hazardous materials release.

The energy generation sector is one of 14 areas of Critical Infrastructure listed by the U.S. Department of Homeland Security. Nearly all of the other areas of Critical Infrastructure are reliant, at least in part, on the energy sector. The level of security needed for any particular facility depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event.

The Department of Homeland Security Interim Final Rule setting forth Chemical Facility Anti-Terrorism Standards (6 CFR Part 27) requires facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. Although the proposed facility would not be covered by the standards, the BLM’s position is that the Applicant should implement a minimum level of security consistent with the Standards. The DOE published a draft Vulnerability Assessment Methodology for Electric Power Infrastructure in 2002 (DOE, 2002). Energy sector members also are leading a significant voluntary effort to increase planning and preparedness, including infrastructure protection and cyber security. The North American Electric Reliability Corporation (NERC) has established a Critical Infrastructure Protection Program to coordinate and improve physical and cybersecurity for the bulk power system of North America as it relates to reliability (NERC, 2011).

For setting information regarding fire hazards, see Section 3.21, *Wildland Fire Ecology*.

3.9.2 Applicable Regulations, Plans, and Standards

3.9.2.1 Federal

Comprehensive Environmental Response and Liability Act and Superfund Amendments and Reauthorization Act

The Superfund Amendments and Reauthorization Act (SARA) amends the Comprehensive Environmental Response and Liability Act (CERCLA) and governs hazardous substances. The applicable part of SARA for the proposed MSEP is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). EPCRA establishes requirements for federal, state, and local governments, as well as Indian Tribes and industry members regarding emergency planning and reporting on hazardous and toxic chemicals (USEPA, 2000). Key sections of the law include:

> ***§304*****:** Requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response commission (SERC) when a hazardous material is released in excess of its reportable quantity (RQ). If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.
>
> ***§311*****:** Requires that either material safety data sheets (MSDSs) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.

Clean Air Act

Regulations under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop an RMP, including hazard assessments and response programs to prevent accidental releases of listed chemicals.

Toxic Substances Control Act, Resource Conservation and Recovery Act

The Federal Toxic Substances Control Act of 1976 (TSCA) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the USEPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes.

Hazardous Materials Transport Act

The U.S. Department of Transportation (USDOT), in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 directs the USDOT to establish criteria and regulations regarding the safe storage and transportation of hazardous materials. 49 CFR Parts 171–180 regulate the transportation of hazardous materials, the types of material that are defined as hazardous, and the marking of vehicles transporting hazardous materials.

Federal Aviation Administration

The FAA regulates aviation at regional, public, private, and military airports. The FAA regulates objects affecting navigable airspace and structures taller than 200 feet. USDOT and Caltrans also require the applicant to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration (USDOT, 2007). According to 14 CFR Part 77.17, notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing any adverse impacts on the safe and efficient use of navigable airspace. Any structure that would constitute a hazard to air navigation, as defined in 14 CFR Part 77, requires issuance of a permit from Caltrans's Division of Aeronautics. The permit is not required if the FAA aeronautical study determines that the structure has no impact on air navigation.

Occupational Safety and Health Administration

The OSHA's mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. The OSHA staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs.

3.9.2.2 State

Safe Drinking Water and Toxics Enforcement Act

The Safe Drinking Water and Toxics Enforcement Act (Health and Safety Code §25249.5 et seq.) identifies chemicals that cause cancer and reproductive toxicity, provides information for the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by California's Office of Environmental Health Hazard Assessment (OEHHA).

Aboveground Petroleum Storage Act

Assembly Bill 1130 (2007) updated the Aboveground Petroleum Storage Act of 1990 (Health and Safety Code §§25270 to 25270.13) and requires the owner or operator of a tank facility with an aggregate storage capacity greater than 1,320 gallons of petroleum to file an inventory statement with the local Certified Unified Program Agency (CUPA) and to prepare an SPCC plan. An SPCC plan must identify appropriate spill containment or equipment for diverting spills from sensitive areas, as well as discuss facility-specific requirements for the storage system, inspections, recordkeeping, security, and personnel training.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act (Health and Safety Code §25500 *et seq*.; 19 CCR §2620, *et seq*.), requires local governments to regulate local businesses using hazardous materials in excess of certain quantities to prepare a Hazardous Materials Business Plan (HMBP) that describes their facilities, inventories, emergency response plans, and training programs to their local CUPA and to report releases to their CUPA and the California Office of Emergency Services. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste. HMBPs shall include the following: (1) a hazardous material inventory in accordance with 19 CCR §§2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with 19 CCR §2731; and (3) training program information in accordance with 19 CCR §2732. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

1. 500 pounds of a solid substance,
2. 55 gallons of a liquid,
3. 200 cubic feet of compressed gas,
4. A hazardous compressed gas in any amount, and
5. Hazardous waste in any quantity.

Health and Safety Code §25531

This code section and the California Accidental Release Program (CalARP) regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an extremely hazardous substance by the USEPA as part of its implementation of SARA Title III. Health and Safety Code §25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above Threshold Planning Quantities must register with their local CUPA and prepare an RMP.

8 CCR §5189

This regulation requires facility owners that store a TQ of hazardous materials to develop and implement effective safety management plans that ensure that hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Health and Safety Code §41700

This code section states, “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”

Hazardous Waste Control Law

The Hazardous Waste Control Law (HWCL) (Health and Safety Code §§25100-25249) created the state hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in 22 CCR §66250 et seq., which describes the following required aspects for the proper management of hazardous waste:

1. Identification and classification;
2. Generation and transportation;
3. Design and permitting of recycling, treatment, storage, and disposal facilities;
4. Treatment standards;
5. Operation of facilities and staff training; and
6. Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCL and its implementing regulations, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

This program requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are:

1. Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (a.k.a., Tiered Permitting),
2. Aboveground Petroleum Storage Tank SPCC,
3. Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or "Community-Right-To-Know"),
4. CalARP,
5. Underground Storage Tank (UST) Program, and
6. Uniform Fire Code Plans and Inventory Requirements.

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA. The Riverside County Department of Environmental Health is the CUPA in the Project area.

California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) was created in 1991, which unified California's environmental authority in a single cabinet-level agency and brought the ARB, State Water Resources Control Board (SWRCB), RWQCBs, Integrated Waste Management Board (now CalRecycle), DTSC, and the OEHHA under one agency. These agencies were placed within the CalEPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of state resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

Department of Toxic Substance Control

The DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of the federal RCRA and the California Health and Safety Code (primarily Title 22, Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Government Code §65962.5 (commonly referred to as the Cortese List) includes the DTSC-listed hazardous waste facilities and sites, CDPH lists of contaminated drinking water wells, sites listed by the SWRCB as having UST leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites that have had a known migration of hazardous waste and/or material.

California Office of Emergency Services

In order to protect the public health and safety and the environment, the California Office of Emergency Services is responsible for establishing and managing statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and the health risks) needs to be available to firefighters, public safety officers, and regulatory agencies. Such information needs to be included in business plans in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal-OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal-OSHA standards are generally more stringent than federal regulations. An employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR §§337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Highway Patrol

A valid Hazardous Materials Transportation License, issued by the California Highway Patrol, is required by the laws and regulations of Vehicle Code §3200.5 for transportation of either:

1. Hazardous materials shipments for which the display of placards is required by state regulations; or

2. Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the California Highway Patrol under the authority of the Vehicle Code. Transportation of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (14 CCR §§1150-1152.10). Inhalation hazards face similar, more restrictive rules and regulations (13 CCR §§1157-1157.8). Radioactive materials are restricted to specific safe routes for transportation of such materials.

Public Resources Code §§4292-4293, Powerline Hazard Reduction

PRC §4292 requires and presents guidelines for a 10-foot firebreak consisting of a clearing of not less than 10 feet in each direction from the outer circumference of the base of power poles. PRC §4293 requires and presents guidelines for maintaining a 4-foot clearance in all directions between all vegetation and all conductors carrying between 2.4 and 72 kV, and a 10-foot clearance for lines carrying over 110 kV. The proposed distribution line would operate at 12 kV and the gen-tie line would operate at 230 kV.

California Code of Regulations

The CCR is a catalog of regulations adopted by state agencies, including:

1. 8 CCR §2700 et seq., High Voltage Electrical Safety Orders, which establish essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger.

2. 14 CCR §§1250-1258, Fire Prevention Standards for Electric Utilities, which provide specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply. It establishes minimum clearance requirements for flammable vegetation and materials surrounding structures.

3.9.2.3 Local

Riverside County Fire Department Fire Prevention Standards

In accordance with the 2010 California Fire Code, the RCFD incorporated the Fire Apparatus Access Roads standard (§503) and Knox Box Emergency Access System standard (§506) into its operational standards. Under these standard, all required building plans must be submitted to the RCFD for review and approval of access roads and points and Knox Box mounting location and position and operating standards prior to installation (RCFD, 2011a, 2011b).

Riverside County Airport Land Use Compatibility Plan

Policy 4.3.7 of the Compatibility Plan states, “New land uses that may cause visual, electronic, or increased bird strike hazards to aircraft in flight shall not be permitted within any airport’s influence area.” Specifically, glare or distracting lights that could be mistaken for airport lights; sources of dust, steam, or smoke that may impair pilot visibility; sources of electrical interference with aircraft communications or navigation; and any proposed use, especially landfills and certain agricultural uses, that creates an increased attraction for large flocks of birds, should all be avoided (Riverside County ALUC, 2005b). A portion of the gen-tie line would be located within the Blythe Airport’s influence area.

3.10 Lands and Realty

This section describes existing land use conditions in the Project area. Land use can be assessed by analyzing current land activities, land ownership, and land use designations in adopted land use plans and policies. An assessment of land use must also consider legal guarantees or limitations on land use such as those provided by easements, deeds, ROWs, claims, leases, licenses, and permits. BLM-administered lands may be encumbered by easements, ROWs, mining claims, and permits.

Land uses on the BLM-administered portion of the Project site are governed by the CDCA Plan, which is based on the concepts in the FLPMA. Specifically, the purpose of the CDCA Plan is to "provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." The principle of multiple use is defined in the FLPMA §103(c) as follows:

> *The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.*

3.10.1 Environmental Setting

BLM manages a diverse combination of lands and resources administered by BLM in eastern Riverside County, including but not limited to, land uses for utility corridors, communication sites, land tenure (disposal, acquisition, or easement) issues, land use authorizations (permits and ROWs), withdrawals, and renewable energy activities.

3.10.1.1 General Characteristics

The Project would be located almost entirely on BLM-administered lands in eastern Riverside County (see Figure 2-2). The site currently consists of vacant and undeveloped desert land. Development in the surrounding area includes the City of Blythe to the southeast. The Project encompasses all or portions of BLM-administered land in Sections 25 through 30 and 32 through 35, Township 5 South, Range 21 East. Non-federal land proposed for development includes the west half and the southeast quarter of Section 36, Township 5 South, Range 21 East. With the exception of a short segment of the gen-tie line (west half of the southwest quarter of Section 2, Township 7 South, Range 21 East) and a short segment of the distribution line (south half of the southwest quarter, Section 8, Township 6 South, Range 22 East), the linear facilities avoid crossing non-federal land (Kershaw, 2011).

3.10.1.2 Land Ownership/Management

BLM Land Use Designations

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through the FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan (BLM 1980, as amended) is based on the concepts of multiple-use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

Secretary of the Interior Ken Salazar signed the Record of Decision for the Solar PEIS on October 12, 2012 and, thereby, amended the CDCA Plan to designate the Riverside East SEZ (including the MSEP application area) as a priority area for commercial-scale solar development. However, as explained in Section 1.5.1, *Relationship of the Proposed Action to the Solar PEIS*, neither the Solar PEIS ROD nor its CDCA Plan amendments govern the MSEP, which is identified in the Solar PEIS ROD as a pending application. “Pending applications are not subject to any of the decisions adopted by [the Solar PEIS] ROD” (BLM and DOE, 2012, Section B. 1.2, p. 146). Consequently, the MSEP remains subject to the pre-Solar PIS ROD requirements of the CDCA Plan, which, as discussed below, would require a Project-specific land use plan amendment if the requested ROW grant were approved. Regardless of the Solar PEIS ROD and its CDCA Plan amendments, lands within the Riverside East SEZ (including the MSEP site) remain open to discretionary actions, such as rights-of-way and land use permits, and to the mineral sales and leasing laws.

The CDCA Plan developed a classification system that places BLM-administered public lands in the CDCA into one of four multiple-use classes, based on the sensitivity of the resources and types of uses for each geographic area. The CDCA lands in Eastern Riverside County are assigned to the classes in the proportions shown in Table 3.10-1 below.

TABLE 3.10-1
MULTIPLE-USE CLASS DESIGNATIONS

Class	Acreage	% of Total Planning Area Public Lands
C	576,858	37.8
L	550,087	36.0
M	399,024	26.1
I	0	0
U	1,886	0.1
Total	***1,527,855***	***100***

The Multiple-Use Class Guidelines, as delineated in Table 1, pages 15-20 of the CDCA Plan (BLM, 1980), apply to CDCA lands in Eastern Riverside County.

Descriptions of the multiple-use classes are as follows:

> **Class C:** Multiple-Use Class C (Controlled) has two purposes. First, it shows those areas which are being "preliminarily recommended" as suitable for wilderness designation by Congress. This process is explained in the Wilderness Element of the CDCA Plan (BLM 1980). Second, it will be used in the future to show those areas formally designated as "wilderness" by Congress.
>
> The Class C Guidelines are different from the guidelines for other classes. They summarize the kinds of management likely to be used in these areas when and if the areas are formally designated wilderness by Congress. These guidelines will be considered in the public process of preparing the final Wilderness Study Reports. However, the final management decisions depend on Congressional direction in the legislation that makes the formal designation.
>
> **Class L:** Multiple-Use Class L (Limited Use) protects sensitive natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.
>
> **Class M:** Multiple-Use Class M (Moderate Use) is based upon a controlled balance between higher-intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.
>
> **Class I:** Multiple-Use Class I (Intensive Use) provides for concentrated use of lands and resources to meet human needs. Reasonable protection will be provided for sensitive natural and cultural values. Mitigation of impacts on resources and rehabilitation of impacted areas will occur insofar as possible.
>
> **Unclassified Lands:** Scattered and isolated parcels of public land in the CDCA that have not been placed within multiple-use classes are "unclassified" land. These parcels will be managed on a case-by-case basis, as explained in the Land Tenure Adjustment Element of the CDCA Plan.
>
> **Plan Elements:** The CDCA Plan Elements provide specific application of the multiple-use class guidelines for specific resources or activities about which the public has expressed significant concern.

Donated Lands

The BLM can be the recipient and trustee of land donated by individuals or groups. Often such lands are donated with the express interest of preserving the resources that characterize these lands. In so doing, a restrictive instrument such as a conservation easement or deed restriction is attached to the donation and land that would control its use, often in terms of prohibiting development or change to the landscape. There is no record of such a donation and accompanying restrictive instrument associated with the Project site.

Riverside County

The privately owned portion of the Project site is under Riverside County jurisdiction and land uses are governed by Riverside County plans and policies.

3.10.1.3 Existing Uses

There are no existing authorized uses within the proposed boundaries of the Project site. Within the immediate and surrounding areas of the Project, there are no communications sites, land use permits, leases or easements of record, nor are any land tenure issues identified in close proximity to or that would be affected by the Project. There are, however, multiple-use class management guidelines for the site, utility corridors, ROWs, renewable energy activities, an authorized withdrawal for the Eagle Mountain Pumped Storage Project, and withdrawal applications (see Figure 4.1-1) (Kershaw, 2011).

Multiple-Use Guidelines

The Project site is located within lands designated by the CDCA as “Class L,” or limited use. The MSEP would be permitted in Class L area as a solar energy facility provided that the BLM complies with NEPA and follows the CDCA Plan Amendment process. For MUC-L lands, the guidelines from the CDCA Plan, Table 1 that are applicable to the MSEP are included in Table 3.10-2.

Utility Corridors

The CDCA Plan (1980, as amended), identifies “planning” and “contingency” utility corridors on BLM-administered land. One of the broad goals of the BLM system of utility corridors is to implement the network of joint-use planning corridors to meet projected utility needs. Planning corridors, commonly referred to as “designated” corridors, are the locations where the BLM requests that applicants focus their attention in developing proposals for linear facilities on BLM-administered land. “Contingency” corridors are identified as having potential for use in the future and can become a “designated” corridor after completion of a land use plan amendment. Both types of corridors are identified in the CDCA Plan using an alphabetic designation (Kershaw, 2011).

CDCA-designated corridors in proximity to the Project are Corridor J, a 2-mile-wide, north-south corridor lying roughly 1 mile to the east; and Corridor K, a 2- to 4-mile-wide, east-west corridor lying approximately 5 miles to the south (see Figure 4.1-1).

Additionally, §368 of the EPAct (Public Law 109-58) requires the DOI to examine and designate energy transportation corridors in the West. In response, the BLM issued the “*Approved Resource Management Plan Amendments/Record of Decision (ROD) for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States*” (January, 2009) which designated §368 Corridors in the western United States. Section 368 corridors are identified with a numeric designation and are often overlain on locally designated corridors, as is the case with the east-west §368 2-mile wide Corridor 30-52 overlying Corridor K (see Figure 4.1-1).

TABLE 3.10-2
MULTIPLE-USE CLASS L LAND USE AND RESOURCE MANAGEMENT GUIDELINES

Land Uses / Resources	MUC L Guidelines
1. Agriculture	Agricultural uses (excluding livestock grazing) are not allowed.
2. Air Quality	These areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments unless otherwise designated another class by the State of California as a result of recommendations developed by any BLM air-quality management plan.
3. Water Quality	Areas designated in this class will be managed to provide for the protection and enhancement of surface and groundwater resources, except for instance of short-term degradation caused by water development projects. Best management practices, developed by the Bureau during the planning process outlined in the Clean Water Act, Section 208, and subsequently, will be used to keep impacts on water quality minimal and to comply with Executive Order 12088.
4. Cultural and Paleontological Resources	Archaeological and paleontological values will be preserved and protected. Procedures described in 36 CFR 800 will be observed where applicable. A Memorandum of Agreement has been signed by the BLM, the California State Historic Preservation Officer, and for cultural resources the President's Advisory Council on Historic Preservation to protect cultural resources.
5. Native American Values	Native American cultural and religious values will be preserved where relevant and protected where applicable. Native American group(s) shall be consulted. Memorandums of Agreement and Understandings have been signed between BLM and the Native American Heritage Commission pertaining to Native American concerns and cultural resources.
6. Electrical Generation Facilities	Electrical generation plants may be allowed, Existing facilities may be maintained and upgraded or improved in accordance with special-use permits or by amendments to rights-of-way. a. Wind/Solar may be allowed after NEPA requirements are met. b. Geothermal may be allowed pursuant to licenses issued under 43 CFR Section 3250 et seq. NEPA requirements will be met.
7. Transmission Facilities	New gas, electric, and water transmission facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met. Existing facilities within designated corridors may be maintained and upgraded or improved in accordance with existing rights-of way grants or by amendments to right-of-way grants. Existing facilities outside designated corridors may only be maintained but not upgraded or improved.
7a. Distribution Facilities	New distribution systems may be allowed and will be placed underground where feasible except where this would have a more detrimental effect on the environment than surface alignment. In addition, new distribution facilities shall be placed within existing ROW where they are reasonably available. Existing facilities may be maintained and utilized in accordance with right-or-way grants and applicable regulations.
8. Communication Sites	Existing facilities may be maintained and utilized in accordance with right-or-way grants and applicable regulations.
9. Fire Management	Fire suppression measures will be taken in accordance with specific fire management plans subject to such conditions as the authorized officer deems necessary, such as use of motorized vehicle, aircraft, and fire retardant chemicals.
10. Vegetation	Removal of vegetation, commercial or non-commercial, may be allowed by permit only after NEPA requirements are met and after development of necessary stipulation. Harvesting by mechanical means may be allowed by permit only. All state and federally listed species will be fully protected. Actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service. Identified sensitive species will be given protection in management decisions consistent with BLM policies.

TABLE 3.10-2 (Continued)
MULTIPLE-USE CLASS L LAND USE AND RESOURCE MANAGEMENT GUIDELINES

Land Uses / Resources	MUC L Guidelines
10. Vegetation (cont.)	Identified UPAs will be considered when conducting all site-specific environmental impact analyzes to minimize impact. See also Wetland/Riparian Areas guidelines. Mechanical control will not be allowed. Aerial broadcasting application of chemical controls will not be allowed. Noxious weed eradication may be allowed after site-specific planning. Types and uses of pesticides, in particular herbicides must conform to Federal, State and local regulations. Enclosures may be allowed. Prescribed burning may be allowed after development of a site-specific management plan.
11. Land-Tenure Adjustment	Public Land will not be sold.
12. Livestock Grazing	Grazing will be allowed subject to the protection of sensitive resources. Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, may be allowed consistent with protection of sensitive resources. Manipulation of vegetation by chemical or mechanical means will not be allowed, except for site-specific needs.
13. Mineral Exploration and Development	Except as provided in Appendix 5.4, 516, DM 6, NEPA procedures titled “Categorical Exclusions”, prior to approving any lease, notice, or application that was filed pursuant to 43 CFR 3045, 3100, 3200, 3500 and S.O. 3087, as amended, an EA will be prepared on the proposed action. Mitigation and reclamation measures will be required to protect and rehabilitate sensitive scenic, ecological, wildlife vegetative and cultural values. Location of mining claims is nondiscretionary. Operations on mining claims are subject to the 43 CFR 3809 Regulations and applicable State and local law. NEPA requirements will be met. BLM will review plans of operations for potential impacts on sensitive resources identified on lands in this class. Mitigation, subject to technical and economic feasibility, will be required. Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled “Categorical Exclusions”, new material sales locations, including sand and gravel sites, will require an EA. Continued use of existing areas of sand and gravel extractions is allowed subject to BLM permits as specified in 43 CFR 3600.
14. Motorized-Vehicle Access/ Transportation	New roads and ways may be developed under ROW grants or pursuant to regulations or approved plans of operation. Vehicle use on some significant dunes and dry lakebeds may be is allowed (see Motorized Vehicle Access Element). Periodic or seasonal closures or limitations of routes of travel may be required. Access will be provided for mineral exploration and development. Railroads and trams may be allowed to serve authorized uses if no other visible alternative is possible. Temporary landing strips may be allowed by permit.
15. Recreation	This class is suitable for recreation which generally involved low to moderate user densities. Recreation opportunities include those permitted in Class C: a. land-sailing on dry lakes b. non-competitive vehicle touring and events only on “approved” routes of travel All organized vehicle events, competitive or not, require a permit specifying the condition of use. These conditions will include, but are not limited to: a. approved routes b. no pitting, start, finish or spectator areas Permanent or temporary facilities for resource protection and public health and safety are allowed. Trails are open for non-vehicle use and new trails for non-motorized access may be allowed.

TABLE 3.10-2 (Continued)
MULTIPLE-USE CLASS L LAND USE AND RESOURCE MANAGEMENT GUIDELINES

Land Uses / Resources	MUC L Guidelines
16. Waste Disposal	Hazardous waste disposal sites will not be allowed. New non-hazardous waste disposal sites will not be allowed.
17. Wildlife Species and Habitat	All State and federal listed species and their critical habitat will be fully protected. Actions which may affect or jeopardize the continued existence of federally listed species will require formal consultation with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act. Identified species will be given protection in management decisions consistent with BLM policies. Control of depredation wildlife and pests will be allowed in accordance with existing State and Federal laws. Projects to improve wildlife habitat may be allowed subject to environmental assessment. Reintroduction or introduction of native species or established exotic species is allowed.
18. Wetland-Riparian Areas	Wetland/riparian areas will be considered in all proposed land-use actions. Steps will be taken to provide that these unique characteristics and ecological requirements are managed in accordance with Executive Order 11990, Protection of Wetlands (42 CFR 26951), legislative and Secretarial direction, and BLM Manual 6740, “Wetland Riparian Area Protection and Management.” as outlined in the Vegetation Element.
19. Wild Horses and Burros	Populations of wild and free-roaming horses and burros will be maintained in healthy, stable herds, in accordance with the Wild and Free-Roaming Horse and Burro Act of 1971 but will be subject to controls to protect sensitive resources.

The Project would not lie within or adjacent to CDCA-designated Corridors J or K, or §368-designated Corridor 30-52. Linear facilities would not lie within Corridor J. Linear facilities would lie within and directly affect Corridors K and 30-52 in Section 35, Township 6 South, Range 21 East, and Sections 2 through 6, Township 7 South, Range 21 East. This analysis focuses on the potential conflicts with this 5-mile section of Corridors K and 30-52.

I-10 lies within a Designated Corridor as defined by the EPAct §368[1] (identified as Corridor 30-52, 2 miles in width) as well as a locally designated Corridor K (1 mile in width) (each of which is shown in Figure 4.1-1, and both of which lie south of the site on a generally east-west heading). Numerous other linear rights-of-way also lie within and to the north and south of these designated corridors. Locally designated Corridor J (2 miles in width) follows a north-south heading to the east of the Proposed Action but would not be affected by it.

Although the solar generating facilities would not be within the designated corridors, ancillary facilities associated with the Project would. The proposed gen-tie line would cross I-10, and thus Corridors K and 30-52, on a nearly perpendicular path, to connect to the proposed CRS southwest of the Project. The primary fiber optic line would be co-located with the gen-tie line and another buried in a shallow ditch alongside the access road to the site within the corridors. Access to the Project site from I-10 would be from the existing Exit #232, Airport/Mesa Drive via Mesa Drive

[1] Section 368 of the EPAct directs the Secretaries to designate corridors for oil, gas, hydrogen pipe and electric transmission lines on federal land in the 11 western states, perform necessary reviews, and incorporate those designations into land use, land management, or equivalent plans.

Road. A new access road from the frontage road on the north side of I-10 heading north to the site is proposed along the same alignment as the gen-tie line and fiber optic line. This road would cross, on a nearly perpendicular route, the northern portion of the Corridors 30-52 and K.

In addition to the Project, six other priority proposed solar generation projects in eastern Riverside County (BSPP, Genesis Solar Energy Project, Desert Sunlight Solar Farm Project, Rice Solar Energy Project, Palen Solar Power Project, and Desert Harvest Solar Farm) are currently under review or in pre-construction. Figure 4.1-1 identifies these proposed actions by letter: BSPP (N), Genesis (J), Desert Sunlight (P), Rice (L), Palen (H), and Desert Harvest (R). The combined total number of acres identified for consideration in these applications, including the Project, is approximately 34,000 acres. Each of these proposed actions has identified an “action area” that includes more acreage than what would be needed for construction, operation, and maintenance to allow for flexibility in final design. Should one or more ROW grants be authorized, the acreage included in the grant(s) would be only that which is actually needed for an action(s), not the total number of acres identified in the application(s).

The Devers-Palo Verde No. 1 (DPV1) is an existing 500 kV transmission line which spans approximately 128 miles of land within California paralleling I-10 (see Figure 4.1-1, Number 4). The transmission line is within Corridors K and 30-52. DPV1 was approved by the CPUC in 1979 and constructed in 1982.

The Blythe Energy Project Transmission Line Project involves the building of two 230 kV transmission lines spanning approximately 70 miles between the Julian Hinds and Bucks substations, and construction of a new midpoint substation (see Figure 4.1-1, Number 10). This transmission line went under construction in February 2009, was completed in 2010, and has since been energized. The transmission line lies within the existing federally approved utility corridor along I-10.

The Devers-Palo Verde No. 2 (DPV2) Transmission Line Project, approved by the CPUC in January 2007 and by BLM through its ROD issued in July 2011, involves the construction of two 500 kV transmission lines (See Figure 4.1-1, Letter D). The proposed route for the DPV2 Transmission Line is along the south side of I-10, parallel to the existing DPV1 transmission line route (BLM, 2011a). In 1989, the USFWS issued a Certificate of Right-of-Way Compatibility for the portion of the DPV2 route that crosses the Kofa National Wildlife Refuge in Arizona, but a Right-of-Way Permit authorizing construction across the refuge was never issued (CPUC, 2006, pg. A-2). The CPUC modified its permit to authorize only the California portion of the project, and, as discussed above, BLM prepared a ROD approving the project (BLM, 2011b).

The Desert Southwest Transmission Line project consists of construction of an approximately 118-mile 500 kV transmission line and a new substation/switching station (See Figure 4.1-1, Letter F). The BLM Palm Springs-South Coast Field Office approved a ROW grant for the construction of the transmission line which crosses public lands between Blythe and the western end of the Coachella Valley. The project is being constructed within an existing federal utility corridor. Plans for development are being finalized with a possible near-term start date for construction. The project has an expected in-service date of June 30, 2013 (Federal Energy Regulatory Commission [FERC], 2011).

Two substations are identified as part of the solar generating facilities in the area: the CRS and the Red Bluff Substation, which have been approved by BLM's ROD for DPV2 and the Desert Sunlight Solar Farm Project, respectively (BLM, 2011b; BLM, 2011c). The locations of the CRS and Red Bluff Substation are shown in Figure 4.1-1, Letters E and Q, respectively.

3.10.2 Applicable Regulations, Plans, and Standards

3.10.2.1 Federal

FLPMA

The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. Title II of FLPMA, 43 USC §202(c)(1), requires the Secretary of the Interior to "use and observe the principles of multiple use and sustained yield set forth in this and other applicable law" in the development and revision of land use plans. Title V, 43 USC §501 et seq., establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy, and §503 of FLPMA requires the establishment of corridors to the extent practical to minimize adverse environmental impacts and the proliferation of separate ROWs. Through its planning efforts, the BLM PSSCFO has designated corridors throughout the Field Office boundaries (generically identified as "locally designated corridors" and specifically identified by an alphabetical reference).

Additionally, the *Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States* signed January 14, 2009 (BLM, 2009), established corridors (generically identified as "368 corridors") pursuant to §368 of the EPAct.

3.10.2.2 State

There are no applicable state regulations, plans, or standards that apply to the Proposed Action.

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3.11 Mineral Resources

This section presents a discussion of mineral resources relevant to the proposed MSEP. Baseline geologic information was collected from the USGS, the CGS, the BLM, the California Department of Conservation (CDOC), Riverside County, and the Applicant. The study area for the purpose of assessing direct effects on mineral resources includes the footprint of the Project because the area would be unavailable for mineral exploration and/or extraction during the 30-year term of the BLM ROW grant. The study area for indirect effects would be any land area for which future mineral resource exploration or extraction would be precluded by Project-related closure or blockage of public roads or access routes.

3.11.1 Environmental Setting

3.11.1.1 Geologic Environment

The Project site is underlain by younger and older Quaternary age alluvial fan deposits (USGS, 2006). These deposits consist of loose sedimentary material that has been shed from the Palen-McCoy Mountains over the course of the Quaternary period (up to 1.8 million years ago). Figure 3.7-1 illustrates the geologic units underlying the Project site which are denoted by italicized symbols in the text below. The age of each deposit is determined based on how recently the land surface has undergone active sediment build up through periodic flooding and sediment deposition. The older alluvial fan deposits (Qa_3, *Qpv*), located on the western side of the Project site, are distinguished from younger alluvial fan deposits based on the extent to which modern washes have dissected (i.e., down-cut) the ground surface, and the presence of smooth, varnished desert pavement (USGS, 2006). Younger alluvial fan deposits (Qa_6), which underlie the eastern portion of the Project site, are characterized by evidence of recent sediment transport and the presence finer-grained silt, sand and gravel deposits (USGS, 2006). In several locations along the gen-tie line/access road route, modern washes (*Qw*) and wind-blown sand dunes (*Qs*) composed of cohesionless silts and sands intersect the Project site. In general, sedimentary deposits underlying the Palo Verde Mesa become increasingly fine-grained toward the center axis of the valley, and coarse-grained closer to base of the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains. To the south of the MSEP solar plant and to the east of the proposed subtransmission line, an old Pleistocene- to Pliocene-age sedimentary unit (*QTmw*) crops out above the Palo Verde Mesa, forming a series subdued topographic knolls aligned in a northeast direct (USGS, 2006). The geologic units underlying the study area are presented in Table 3.11-1.

3.11.1.2 Mineral Resources Potential

The BLM groups minerals on federal lands into three distinct categories: (1) locatable resources (subject to the General Mining Law of 1872, as amended); (2) leasable resources (subject to various Mineral Leasing Acts); and (3) salable resources (subject to mineral materials disposed of under the Materials Act of 1947, as amended) (BLM, 2011). Locatable minerals include hardrock resources that are typically metals with a unique or special use, such as gold and silver. Leasable minerals include those which are typically found in bedded deposits, such as oil, gas, and

TABLE 3.11-1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS IN THE STUDY AREA

Age	Unit/Description	Unit Symbol	Project Component
Holocene	Alluvium of modern washes	Qw	Gen-tie Line, Access Road
	Eolian Sand	Qs	Gen-tie Line
	Alluvial-fan and alluvial-valley deposits	Qa_6	Unit 1, Unit 2, Gen-tie Line, Gen-tie Line, Access Road, Distribution Line
Holocene ± Pleistocene	Alluvial-fan deposits (Intermediate Alluvium)	Qa_3	Unit 1, Unit 2, Gen-tie Line, Gen-tie Line, Access Road, Distribution Line
Pleistocene	Alluvial deposits of Palo Verde Mesa	Qpv	Gen-tie Line, Access Road, Distribution Line
Pleistocene ± Pliocene	Alluvial deposits of the McCoy Wash area	QTmw	Access Road, Distribution Line

SOURCE: USGS, 2006

geothermal resources. Salable minerals include common variety of materials such as sand, stone, and gravel (BLM, 2010).

The Mineral Resources Data System (MRDS), administered by the USGS, provides data to describe metallic and nonmetallic mineral resources, including deposit name, location, commodity, deposit description, production status and references. To confirm the presence/absence of existing surface mines, closed mines, occurrences/prospects, and unknown/undefined mineral resources within the study area, the MRDS online database was reviewed. While the MRDS data indicates that there are several closed and current mineral resources and operations in the vicinity of the study area, none of these operations or mining claims occurs within the Project site boundary (including off-site linear features) (USGS, 2011).

Based on the geologic setting, the only mineral resources with the potential to occur within the study area are saleable resources. All of the geologic units referenced in Table 3.11-1 are potential sources of sand and gravel that could have value as a mineral resource commodity. Because sand and gravel are low-value, high-volume resources, the economic value and feasibility of developing them is predicated on the existence of high local demand from the construction industry. The closest active producer of sand and gravel is identified in the MRDS online database as being located along Midland Road in close proximity to the Blythe Landfill (USGS, 2011). Additional details on locatable, leasable, and saleable minerals are provided below.

Locatable Minerals

There are no active mining claims within 2.5 miles of the Project site, nor is there any locatable mineral activity within the Project site boundary (USGS, 2007). Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low within the study area. According to review of the MRDS online database, metallic resources and occurrences (such as gold, silver, manganese, and copper) are restricted to the surrounding mountains, including the McCoy, Big Maria, and Mule Mountains (USGS, 2011). Numerous land sections within the mountainous areas have active mining claims, and there are two sites listed in the MRDS as mineral producers. However, none of these resources occurs within the vicinity of the Project site and they are unlikely to be found within the geologic units that underlie the study area.

Leasable Minerals

There are no leasable minerals within the study area. The BLM's Prospectively Valuable maps for leasable minerals show that there is low potential for the occurrence of oil and gas, geothermal resources, oil shale or tar sands, coal, sodium, potassium, and phosphate. Further, the CDOC indicates that there are no oil, gas, or geothermal resources present within the vicinity of the Project site (CDOC, 2001).

Saleable Minerals/Mineral Materials

Sand and gravel deposits are ubiquitous throughout the Quaternary geologic deposits in the vicinity of the Project site and the region. Based on the California statewide geologic map, deposits of similar age and lithology that are likewise potential sources of sand and gravel are estimated to underlie 1,544,000 acres of eastern Riverside County (USGS and CDOC, 2000). There are several past producers and one current producer of sand and gravel on the west side of the McCoy Wash, approximately 5 miles east of the Project site. In addition, there is one former producer of sand and gravel immediately to the east of the access road. None of the past or current producers of sand and gravel intersects the Project site.

3.11.2 Applicable Regulations, Plans, and Standards

3.11.2.1 Federal

Mining and Mineral Policy Act of 1970

This act (30 USC §21 et seq.) declared that the policy of the federal government is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan

The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the Project site. With respect to mineral resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development. The Project site is located within lands designated "Class L," or limited use. Mineral exploration and development is allowed on Class L lands provided that NEPA requirements are met.

3.11.2.2 State

State Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act of 1975 (SMARA) (PRC §2710 et seq.) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System. (CDOC, 2000)

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas which are generally given highest priority are those areas within the state which are subject to urban expansion or other irreversible land uses which would preclude mineral extraction. (CDOC, 2000)

Classification is completed by the State Geologist in accordance with the SMGB's priority list, into MRZs, as defined below. Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. The following MRZ categories are used by the State Geologist in classifying the state's lands:

> ***MRZ-1*****:** Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone is applied where well developed lines of reasoning, based on economic-geologic principles and adequate data, indicate that the likelihood for occurrence of significant mineral deposits is nil or slight.
>
> ***MRZ-2a*****:** Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.
>
> ***MRZ-2b*****:** Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history.
>
> ***MRZ-3a*****:** Areas containing known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate potential for the discovery of economic mineral deposits.

***MRZ-3b*: Areas containing inferred mineral deposits that may qualify as mineral resources. Land classified MRZ-3b represents areas in geologic settings which appear to be favorable environments for the occurrence of specific mineral deposits. MRZ-3b is applied to land where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present.

***MRZ-4*: Areas where geologic information does not rule out either the presence or absence of mineral resources. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence.

If new information becomes available for a MRZ, such as through sampling or mining exploration, re-classification of that MRZ can occur. For example, a MRZ-4 classification could be re-classified to any of the other MRZ classifications (CDOC, 2000).

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3.12 Noise

The following discussion addresses existing environmental conditions in the affected area, both regionally and specific to the Project site. In addition, existing laws and regulations relevant to noise are described.

3.12.1 Environmental Setting

3.12.1.1 General Information on Noise

Noise Background

Noise is defined as unwanted sound. Noise can be described in terms of three variables: amplitude (loud or soft), frequency (pitch), and time pattern (variability), and its potential effects can be described in terms of a noise generating source, a propagation path, and a receiver (Federal Transit Administration [FTA], 2006). The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually composed of sound emanating from natural sources (birds, leaves, etc.) and from human activities (yard maintenance, vehicles, talking, etc.). Ambient sound levels vary with time of day, wind speed and direction, and level of human activity. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Decibels (dB) are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. A ruler is a *linear* scale; it has marks on it corresponding to equal quantities of distance. One way of expressing this is to say that the ratio of successive intervals is equal to one. A *logarithmic* scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1; 10; 100; 1,000; 10,000; etc. Therefore, the cumulative noise level from two or more sources will combine logarithmically, rather than linearly. For example, if two identical noise sources produce a noise level of 50 dB each, the combined noise level would be 53 dB, not 100 dB.

Noise Exposure and Community Noise

Excessive noise exposure has been shown to cause interference with human activities at home, work, or recreation; and can cause community annoyance, hearing loss, and affect people’s health and well-being. Even though hearing loss is the most clearly measurable health hazard, noise is also linked to other psychological, sociological, physiological, and economical effects, either temporary or permanent (USEPA, 1974). Potential human annoyance and health effects associated with noise may vary depending on factors such as: (1) the difference between the new noise and the existing ambient noise levels; (2) the presence of tonal noise, noticeable or discrete continuous sounds, such as hums, hisses, screeches, or drones; (3) low-frequency noise (frequency range of 8 to 1,000 Hertz [Hz]); (4) intermittent or periodic sounds, such as a single vehicle passing by, backup alarms, or machinery that operates in cycles; and (5) impulsive sounds from impacts or explosions (Brüel and Kjaer, 2000). In some cases, noise can also disrupt the normal behavior of wildlife. Although the severity of the effects varies depending on the species being studied and other conditions, research has found that wildlife can suffer adverse physiological and behavioral changes from intrusive sounds and other human disturbances (National Park Service [NPS], 2009).

To describe environmental noise and to assess impacts on areas sensitive to community noise, a frequency weighting measure that simulates human perception is customarily used. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. In general, a difference of more than 3 dBA is a perceptible change in environmental noise, while a 5 dBA difference typically causes a change in community reaction. An increase of 10 dBA is perceived by people as a doubling of loudness, and almost certainly causes an adverse community response.

The community noise environment and the consequences of human activities cause noise levels to be widely variable over time. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (L_{eq}) or by an average level occurring over a 24-hour period. The L_{eq}, or equivalent sound level, is a single value for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually 1 hour. The maximum sound level (L_{max}) during a period can also be described as the maximum instantaneous sound pressure level generated by a piece or group of equipment. Since the sensitivity to noise increases during evening and nighttime hours when people are typically trying to sleep, 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time sounds. The Community Noise Equivalent Level (CNEL) is a measure of the day-night noise exposure, with a 5 dB penalty added to evening sounds (7:00 p.m. to 10:00 p.m.) and a 10 dB addition to nighttime sounds (10:00 p.m. to 7:00 a.m.). The day-night average sound level or L_{dn}, is equal to the 24-hour equivalent sound level with a 10 dBA penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m.

Community noise levels are closely related to the intensity of human activity and land use. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the L_{dn} noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the L_{dn} is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas (e.g., downtown Los Angeles), and levels up to 85 dBA occur near major freeways and airports.

Effects of Noise on People

People experience a wide range of sounds in the environment. Typical noise levels of indoor and outdoor environments are shown in Figure 3.12-1. Excessive noise can be not only undesirable, but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the area. Environmental and community noise levels rarely are of sufficient intensity to cause irreversible hearing damage, but disruptive environmental noise can interfere with speech and other communication and be a major source of annoyance by disturbing sleep, rest, and relaxation.

Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, the higher noise levels nevertheless are considered to be adverse to public health. The surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments tend to be about 7 dB lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation that are subject to nighttime noise are often considered objectionable because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (USEPA, 1974).

Noise Attenuation

Sound level naturally decreases with more distance from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases by 1.5 dBA from 6.0 dBA to 7.5 dBA for each doubling of distance due to ground absorption and reflective wave canceling. These factors are collectively referred to as *excess ground attenuation*. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Widely distributed noises such as a street with moving vehicles (a “line” source) would typically attenuate at a lower rate of approximately 3.0 dBA for each doubling of distance between the source and the receiver. If the ground surface between source and receiver is absorptive rather than reflective, the nominal rate increases by 1.5 dBA to 4.5 dBA for each doubling of distance. Atmospheric effects, such as wind and temperature gradients, can also influence noise attenuation rates from both line and point sources of noise. However, unlike ground attenuation, atmospheric effects are constantly changing and difficult to predict.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

3.12.1.2 Project Setting

The Project site is located in the Colorado Desert in eastern Riverside County. Most of the surrounding land is covered by desert scrub. The site is approximately 13 miles northwest of the City of Blythe and approximately 6 miles north of I-10. The land use of the Project site is undeveloped open space, and the surrounding land uses include undeveloped open space and agricultural.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

There are no residences or other sensitive receptors located within the Project boundary or in the immediate vicinity of the Project site. The nearest sensitive receptors to the Project site are residences located approximately 2.6 miles southeast and 2.7 miles south of the southern site boundary, respectively (Tetra Tech EC, Inc., 2011). In addition, there are several residences that would be within a mile of the proposed gen-tie line, the closest of which is south of I-10 at a distance of approximately 0.6 mile.

Existing Ambient Noise Conditions

The dominant persistent man-made noise source in the region is vehicle traffic on I-10. Secondary noise sources include aircraft operations associated with the Blythe Airport, agricultural operations, the Blythe Skeet and Trap Shooting Club, individual vehicles operating on surrounding local roadways, and occasional off-road vehicle recreationalists. Noise levels in the Project area tend to be dominated by wind, which ebbs and flows throughout the day as the temperature climbs and drops (Solar Millennium LLC, 2009).

Ambient noise levels were measured at a residence located approximately 2.7 miles south of the southern Project boundary in June 2009, using acceptable equipment and techniques (Solar Millennium, 2009). One long-term measurement was taken over a 25-hour period (see Table 3.12-1). Average daytime noise levels were found to be 45 dBA L_{eq} and average nighttime noise levels were found to be 36 dBA L_{eq}.

TABLE 3.12-1
SUMMARY OF MEASURED NOISE LEVELS

Measurement Site	Measured Noise Levels, dBA	
	Average During Daytime Hours L_{eq}	Average During Nighttime Hours L_{90}/L_{eq}
Residence	45[a]	36[b]

NOTES:

[a] Average of the daytime hours

[b] Average of the nighttime hours. The nighttime L_{eq} and the corresponding L_{90} values are equal (Solar Millennium, 2009, p. 5.8-10); this is likely due to the proximity of the project site to I-10 (nighttime noise is likely dominated by the relatively steady noise from I-10).

SOURCE: Solar Millennium LLC, 2009, Section 5.8.2.4; Tables 5.8-5, 5.8-6

3.12.2 Applicable Regulations, Plans, and Standards

Regulating environmental noise is generally the responsibility of local governments. The USEPA, however, has published guidelines on recommended maximum noise levels to protect public health and welfare.

3.12.2.1 Federal

Occupational Safety and Health Act

Under the Occupational Safety and Health Act of 1970 (29 USC §651 et seq.), the OSHA adopted regulations (29 CFR §1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed, as shown in Table 3.12-2. The regulations further specify requirements for a hearing conservation program (§1910.95(c)), a monitoring program (§1910.95(d)), an audiometric testing program (§1910.95(g)), and hearing protection (§1910.95(i)). There are no federal laws governing community noise.

Although no federal noise regulations exist, the USEPA has promulgated noise guidelines. The USEPA guideline recommends an L_{dn} of 55 dBA to protect the public from the effect of broadband environmental noise outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use (USEPA, 1974).

California Desert Conservation Area Plan

The CDCA Plan (BLM, 1980) contains provisions for public land-use management in the California Desert District under the BLM's jurisdiction. Since its first date of publication in 1980, the CDCA Plan has been amended in order to incorporate public concerns and congressional mandates in regard to the use of desert resources, such as the provisions of the CDPA.

TABLE 3.12-2
OSHA-PERMISSIBLE NOISE EXPOSURE STANDARDS

Duration of Noise (hours/day)	A-Weighted Noise Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

SOURCE: USEPA, 1974. 29 CFR §1910.95, Table G-16

In particular, noise-related guidelines established in the CDCA Plan include long-term monitoring of effects of vehicle noise on wildlife (Chapter 3, Wildlife Element) and implementation of land use compatibility standards with limited (vehicle use) areas in order to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands (Chapter 3, Motorized-Vehicle Access Element). The CDCA Plan also identifies energy and utility corridors and power plant sites within the California Desert District (Chapter 3, Energy Production and Utility Corridors Element).

3.12.2.2 State

The Cal-OSHA has promulgated Occupational Noise Exposure Regulations (9 CCR §§5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

3.13 Paleontological Resources

Paleontological resources, or fossils, are the remains of extinct organisms, and provide the only direct evidence of ancient life. They are considered to be non-renewable resources because they cannot be replaced once they are destroyed. For the purpose of this analysis, and in accordance with existing BLM policy, scientifically significant paleontological resources are defined as vertebrate fossils that are identifiable to taxon and/or element, noteworthy occurrences of invertebrate and plant fossils, and vertebrate trackways. The study area associated with paleontological resources would be the land disturbance area of the Project associated with construction, operation and maintenance, and decommissioning.

3.13.1 Environmental Setting

3.13.1.1 Geologic Setting

The Project site is underlain by younger and older Quaternary-age alluvial fan deposits (USGS, 2006). These deposits consist of loose sedimentary material that has been shed from the Palen-McCoy Mountains over the course of the Quaternary period (up to 1.8 million years ago). Figure 3.7-1 illustrates the geologic units underlying the Project site, which are denoted by italicized symbols in the text below. The ages of the deposits are determined based on how recently the land surface has undergone active sediment build-up through periodic flooding and sediment deposition. The older alluvial fan deposits (Qa_3, *Qpv*), located on the western side of the Project, are distinguished from younger alluvial fan deposits based on the extent to which modern washes have dissected (i.e., down-cut) the ground surface, and the presence of smooth, varnished desert pavement (USGS, 2006). Younger alluvial fan deposits (Qa_6), which underlie the eastern portion of the solar plant site, are characterized by evidence of recent sediment transport and the presence of finer-grained silt, sand, and gravel deposits (USGS, 2006). In several locations along the proposed gen-tie line and access road route, modern washes (*Qw*) and wind-blown sand dunes (*Qs*) composed of cohesionless silts and sands intersect the Project site. In general, sedimentary deposits underlying the Palo Verde Mesa become increasingly fine-grained toward the center axis of the valley, and coarse-grained closer to the base of the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains. To the south of the MSEP solar plant and to the east of the gen-tie line, an old Pleistocene- to Pliocene-age sedimentary unit (*QTmw*) crops out above the Palo Verde Mesa, forming a series of subdued topographic knolls aligned in a northeast direction (USGS, 2006).

3.13.1.2 Paleontological Resource Classifications

The potential for discovery of significant paleontological resources is assessed using the Potential Fossil Yield Classification (PFYC) System.

Potential Fossil Yield Classification System

The BLM uses the PFYC system to assess the potential for discovery of significant paleontological resources or the impact of surface disturbing activities to such resources by using a five-class ranking system (BLM, 2007):

1. ***Class 1 – Very Low.*** Geologic units that are not likely to contain recognizable fossil remains. This class usually includes units that are igneous or metamorphic, excluding reworked volcanic ash units; or units that are Precambrian in age or older. Management concern for paleontological resources in Class 1 units is usually negligible or not applicable and assessment or mitigation is usually unnecessary except in very rare or isolated circumstances. The probability for impacting any fossils is negligible and assessment or mitigation of paleontological resources is usually unnecessary.

2. ***Class 2 – Low.*** Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. This class typically includes vertebrate or significant invertebrate or plant fossils not present or very rare, units that are generally younger than 10,000 years before present, recent aeolian deposits, or sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration). Management concern for paleontological resources is generally low. Assessment or mitigation is usually unnecessary except in rare or isolated circumstances and the probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Localities containing important resources may exist, but would be rare and would not influence the overall classification. These important localities would be managed on a case-by-case basis.

3. ***Class 3 – Moderate or Unknown.*** Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. This class includes sedimentary rocks that are marine in origin with sporadic known occurrences of vertebrate fossils or other rocks where vertebrate fossils and scientifically significant invertebrate or plant fossils are known to occur intermittently. The predictability of fossils within these units is known to be low or the units have been poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance. This class is subdivided into two groups: Class 3(a) and Class 3(b).

    a. *Class 3(a)* is assigned to rock units where sufficient information has been developed to know that the unit has widely scattered occurrences of vertebrate fossils and/or scientifically significant invertebrate or plant fossils. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting.

    b. *Class 3(b)* is assigned to rock units that exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed.

4. ***Class 4 – High.*** Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases. This class is subdivided into two groups, based primarily on the degree of soil cover: Class 4(a) and Class 4(b):

    a. *Class 4(a)* is assigned to rock units that are exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface disturbing actions and illegal collecting activities may impact some areas.

b. *Class 4(b)* is assigned to areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

5. ***Class 5 – Very High*.** Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation. This class is subdivided into ***Class 5(a)*** and ***Class 5(b)*** in the same manner as Class 4 above.

3.13.1.3 Paleontological Resources Assessment

SWCA Environmental Consultants (2011) prepared a paleontological resources assessment in support of this PA/FEIS, which is provided in Appendix E. As part of its assessment, SWCA requested a museum record search be performed by the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM) and the Department of Earth Sciences at the San Bernardino County Museum. Museum collections records were searched to: 1) determine whether any known paleontological resources exist in the Project site, 2) identify the geologic units present in the Project site, and 3) determine the paleontological resource potential of the corresponding geologic unit (SWCA, 2011).[1] In addition, between November 7 and November 10, 2011, SWCA conducted a paleontological field survey of the Project site, including the proposed disturbance area and the associated linear alignments. The linear survey encompassed a 200-foot corridor (100-foot survey area on either side of centerline).

The purpose of the fieldwork was to inspect the study area for surface fossils and exposures of potentially fossil-bearing geologic units and to determine areas in which fossil-bearing geologic units could be exposed during Project-related ground disturbances.

Records Search Results

The review of museum collections records at the LACM and San Bernardino County Museum confirmed that no fossil localities have been previously recorded within the Project site or within a 1-mile radius (SWCA, 2011). However, at least three vertebrate fossil localities have been previously recorded southwest of the Project site within the same or similar sediments. LACM 5977, located west-southwest of the Project (north of I-10 and on the southwest side of Ford Dry Lake), yielded fossilized remains of *Perognathus* (pocket mouse). LACM 208 and LACM 3414, located west-northwest of the Project site between Eagle and Coxcomb mountains, yielded fossilized remains of *Gopherus* (tortoise), *Equus* (horse), *Camelops* (camel), and *Tanupolama stevensi* (llama).

A search of the UCMP online paleontological database revealed that at least 21 additional fossil localities of Quaternary age have been documented in Riverside County, 17 of which yielded vertebrate fossil remains from Pleistocene-age deposits. UCMP V6004, also known as “Blythe,”

[1] All research was conducted in accordance with accepted assessment protocol of the Society for Vertebrate Paleontology’s (SVP) *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines* (SVP, 1995).

yielded unspecified fossils of Rancholabrean age. UCMP V99828, also known as "Blythe Energy Turtles," yielded two fossil specimens of *Gopherus agasizzi* (California desert tortoise).

Field Survey Results

No significant fossil resources were discovered as a result of the survey (SWCA, 2011). One non-significant fossil occurrence, a fossilized carapace fragment of a desert tortoise, was discovered in the gen-tie line and access road corridor during the course of the fieldwork. The fossil was found ex situ as a lag deposit transported an unknown distance and redeposited on top of alluvial sediments. For this reason, and due to the lack of diagnostic characteristics, it was not considered scientifically significant.

Paleontological Sensitivity

Based on the geologic setting, the museum records search, field survey, and SVP criteria, SWCA (2011) determined the paleontological resource potential of the underlying geologic units throughout the Project site. The PFYC Class is assigned by mapped geologic units, which are shown in Figure 3.13-1.

The paleontological resources assessment performed by SWCA (2011) did not identify the PFYC of each of the geologic units in the study area, and the BLM had not previously assigned PFYC classification for land within the Project site. However, SWCA gathered the information necessary to make a determination of the PFYC classes within the Project site. Based on the negative results of the field survey and museum records search and on the paleontological resources potential of each geologic unit, Holocene units underlying the Project site would be classified as PFYC Class 2 and Pleistocene or older sedimentary units would be classified as PFYC Class 3(a).

Summary

A paleontological records search and a surface survey found no evidence for the presence of significant paleontological resources within the footprint of the Project. However, based on the geologic setting and SWCA's paleontological resources assessment, the Pleistocene-age or older sedimentary deposits found beneath the western portion of the solar field site and various portions of the gen-tie line would be considered as Class 3(a) under the PFYC system (see Table 3.13-1). Even shallow excavations within these units have the potential to disturb yet unknown or undiscovered but potentially significant fossil resources. Younger alluvium, eolian sand, and modern wash deposits, which predominantly underlie the eastern part of the solar plant site, and portions of the gen-tie line, are units with a low paleontological resource potential. However, because these units are frequently underlain by older sedimentary deposits at undetermined but potentially shallow depths, these areas would be considered as PFYC Class 2. While shallow excavations within these areas have a low potential to disturb paleontological resources, deeper excavations in these areas could uncover yet unknown or undiscovered but potentially significant fossil resources.

TABLE 3.13-1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS IN THE STUDY AREA SHOWING PALEONTOLOGICAL RESOURCE POTENTIAL

Age	Unit/Description	Map Unit Symbol	Project Component	PFYC Class[b]
Holocene	Alluvium of modern washes	Qw	Gen-tie Line, Access Road	2
	Eolian Sand	Qs	Gen-tie Line	2
	Alluvial-fan and alluvial-valley deposits	Qa_6	Unit 1, Unit 2, Gen-tie Line, Gen-tie Line, Access Road, Distribution Line	2
Holocene ± Pleistocene	Alluvial-fan deposits (Intermediate Alluvium	Qa_3	Unit 1, Unit 2, Gen-tie Line, Gen-tie Line, Access Road, Distribution Line	3(a)
Pleistocene	Alluvial deposits of Palo Verde Mesa	Qpv	Gen-tie Line, Access Road, Distribution Line	3(a)
Pleistocene ± Pliocene	Alluvial deposits of the McCoy Wash area	QTmw	Access Road, Distribution Line	3(a)
Pleistocene ± Miocene	Alluvial-fan and alluvial-valley deposits (Older Alluvium)	QTa_2	None [a]	3(a)

NOTES:
[a] Not mapped at the surface within the MSEP site but may be present at depth below the alluvial-filled basin.
[b] BLM classification assigned based on BLM guidance (BLM, 2007)

SOURCE: USGS, 2006

3.13.2 Applicable Regulations, Plans, and Standards

3.13.2.1 Federal

The management and preservation of paleontological resources on public lands are governed under various laws, regulations, and standards. For the past several decades, the BLM has used the FLMPA as the legislative foundation for its paleontological resource management policies. The BLM has also developed general procedural guidelines (Manual H-8720-1; Instructional Memorandum [IM] 2008-009; IM 2009-011) for the management of paleontological resources (BLM, 2007). Paleontological resource management objectives include the evaluation, management, protection, and location of fossils on BLM-managed lands. Management policy also includes measures to ensure that proposed land-use projects do not inadvertently damage or destroy scientifically significant paleontological resources.

Federal Land Management and Policy Act

FLMPA defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (PRPA), Title VI, Subtitle D of the Omnibus Public Lands Act directs the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using "scientific principles and expertise." The PRPA incorporates most of the recommendations of the report of the Secretary of the Interior entitled "Assessment of Fossil Management on Federal and Indian Lands (USDI, 2000) in order to formulate a consistent paleontological resources management framework. In passing the PRPA, Congress officially recognized the scientific importance of paleontological resources on some federal lands by declaring that fossils from these lands are federal property that must be preserved and protected. The PRPA codifies existing policies of the BLM, NPS, USFS, Bureau of Reclamation, and USFWS, and provides the following:

1. criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands;
2. minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants);
3. definitions for "paleontological resources" and "casual collecting"; and
4. requirements for curation of federal fossils in approved repositories.

Federal legislative protections for scientifically significant fossils apply to projects that take place on federal lands (with certain exceptions such as DOD), involve federal funding, require a federal permit, or involve crossing state lines. Because the vast majority of the Project site occurs on BLM-managed lands, federal protections for paleontological resources apply under NEPA and FLPMA.

Potential Fossil Yield Classification System

Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources.

The BLM uses the PFYC system, which classifies geologic units based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

The PFYC system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources. The classification should be considered at an intermediate point in the analysis, and should be used to assist in determining the need for further mitigation assessment or actions. Each of the individual classes is described above under Section 3.13.1.2.

3.13.2.2 State

PRC §5097.5 includes additional state-level requirements for the assessment and management of paleontological resources, including the reasonable mitigation of adverse impacts to paleontological resources resulting from development on public lands (lands under state, county, city, or public district or agency ownership or jurisdiction). This regulation defines the removal of paleontological "sites" or "features" from public lands as a misdemeanor, and prohibits the removal of any paleontological "site" or "feature" from public land without permission of the applicable jurisdictional agency. These protections apply only to non-federal public lands within California, and thus apply only to the small portion of the gen-tie line that would be located on County-owned land.

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3.14 Recreation and Public Access (Off-Highway Vehicles)

The following discussion addresses existing recreational resources within the vicinity of the Project and describes existing laws and regulations relevant to those resources. For the purposes of this analysis, "vicinity" has been defined as the area within 20 miles of the Project site. This is an appropriate study area for recreation because it captures all major recreation resources (refer to Table 3.14-1, below) that contribute to baseline conditions and could potentially be affected by activities related to the Project.

For the purpose of this section, the terms o*ff-road vehicles* and *off-highway vehicles* (OHV) are used interchangeably (OHV is the term most used in BLM and other federal land use planning).

3.14.1 Environmental Setting

3.14.1.1 Recreation Resources on the Project Site

The types of recreational uses that may be made of the site are governed by the CDCA Plan (BLM, 1980); and the NECO Plan Amendment (BLM, 2002). The site is designated in the CDCA Plan for Multiple-use Class L, or Limited Use (BLM, 1980). Class L lands are suitable for recreation activities that generally involve low to moderate user densities, including backpacking, primitive unimproved site camping, hiking, horseback riding, rockhounding, nature study and observation, photography and painting, rock climbing, spelunking, hunting, landsailing on dry lakes, noncompetitive vehicle touring, mountain and trail biking, and events only on "approved" routes of travel (BLM, 1980, 2002). Stopping, parking, and vehicle camping are allowed to occur within 300 feet of a route, except within sensitive areas such as Areas of Critical Environmental Concern (ACECs), where the limit is 100 feet (BLM, 2002). Trails are open for non-vehicular use and new trails for non-motorized access may be allowed (BLM, 1980). Recreational vehicle use, including OHV use, is discussed below in Section 3.14.1.3. Additionally, the northern half of the Unit 2 site is identified as lands with wilderness characteristics, as shown in Figure 3.16-1 of Section 3.16, *Special Designations*. In order for an area to be classified as having wilderness characteristics, it must possess sufficient size, naturalness, and outstanding opportunities for either solitude or primitive and unconfined recreation. There are no recreation facilities, developments, or specific recreational attractions on the site. The BLM has no visitor counts for the site but visitor use is estimated to be low due to the availability and accessibility of recreation opportunities in the surrounding area (BLM, 2011i).

3.14.1.2 Recreation Resources In the Vicinity of the Project Site

The Palo Verde Valley offers multiple outdoor recreational opportunities for boating, water skiing, jet skiing, swimming, fishing, canoeing, camping, rock hounding, hiking, mountain and trail biking, archery, hunting, horseback riding, trapping, trap and skeet shooting, and OHV use.

BLM-Administered Recreation Resources

The BLM administers wilderness areas, long term visitor areas (LTVAs), ACECs, and other recreational opportunities in the vicinity of the site. ACECs and wilderness also provide dispersed recreation opportunities in the region. Overall, recreation use on BLM lands in the vicinity of the Project is limited to the cooler months of September through May, with little or no use in the summer. Popular recreation activities include car and recreational vehicle (RV) camping, OHV riding and touring, hiking, photography, hunting (dove, quail, deer), sightseeing, and visiting cultural sites. Outside of fee collection sites, the BLM has no accurate estimates of visitor use, but staff observations and ranger patrols indicate the area described in this section received 2,000 to 3,000 visitors per year (BLM, 2011i). Local residents and long-term winter visitors make up the majority of the use. Such areas are identified in Table 3.14-1, beginning with the area closest to the site, and are discussed below.

TABLE 3.14-1
BLM-ADMINISTERED RECREATIONAL AREAS AND OPPORTUNITIES IN THE PROJECT VICINITY

Recreation Area	Size	Distance from ROW Application Boundary (mi)	Distance from Solar Plant Site Boundary (mi)	Distance from Gen-Tie Line (mi)	Distance from CRS (mi)
Palen/McCoy Wilderness	236,488 ac	1.8	2.0	6.5	7.3
Midland LTVA	512 ac	4.6	4.2	3.9	12.8
Big Maria Mountains Wilderness	45,384 ac	7.5	7.1	6.8	15.7
Mule Mountains ACEC	4,092 ac	9.4	9.4	2.2	1.7
Chuckwalla Valley Dune Thicket ACEC	2,273 ac	8.5	8.8	5.4	5.3
Big Marias ACEC	4,500 ac	11.7	11.0	10.5	18.0
Rice Valley Wilderness	41,777 ac	10.5	10.5	11.0	20.0
Bradshaw Trail	65 mi	13.3	13.5	6.2	5.6
Mule Mountains LTVA	3,424 ac	13.4	13.6	6.3	5.8
Wiley's Well Campground	14 units	14.3	14.6	7.5	7.0
Little Chuckwalla Mountains Wilderness	28,034 ac	14.8	14.4	9.9	9.6
Coon Hollow Campground	28 units	17.5	17.7	10.6	10.0
Palen Dry Lake ACEC	3,632 ac	16.8	17.1	17.9	17.9
Palo Verde Mountains Wilderness	30,605 ac	17.9	17.8	10.7	10.3
Riverside Mountains Wilderness	24,004 ac	19.3	19.6	19.6	29.0

NOTE: Sizes and distances are approximate.

SOURCES: BLM, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f, 2011g, 2011h; Wilderness.net, 2011a, 2011b, 2011c; Wildernet, 2011

Wilderness Areas

Wilderness Areas are shown in Figure 3.14-1 and described in Section 3.16, *Special Designations*. As indicated in Table 3.14-1, six wilderness areas are located in the vicinity of the site: the Palen-McCoy Wilderness, Big Maria Mountains Wilderness, Rice Valley Wilderness, Little Chuckwalla Mountains Wilderness, Palo Verde Mountains Wilderness, and Riverside Mountains Wilderness. The Wilderness Act limits allowable types of recreation on wilderness lands to those that are primitive and unconfined, depend on a wilderness setting, and do not degrade the wilderness character of the area. Motorized or mechanized vehicles or equipment are not permitted in wilderness. The BLM regulates such recreation on such lands within its jurisdiction in accordance with the policies, procedures and technologies set forth in the Code of Federal Regulations (43 CFR 6300), BLM Manual 8560 (*Management of Designated Wilderness Areas*) (BLM, 1983), BLM Handbook H-8560-1 (*Management of Designated Wilderness Areas*) (BLM, 1986), and BLM's Principles for Wilderness Management in the California Desert (BLM, 1995). More specifically, camping, hiking, rockhounding, hunting, fishing, non-commercial trapping, backpacking, climbing, and horseback riding are permissible (BLM, 1988; BLM, 1983). By contrast, physical endurance contests (such as races, competitive trail rides and survival contests), commercial recreational activities, and the use of motorized or mechanized vehicles (including OHVs, aircraft and motor boats) generally are prohibited (16 USC §1133(c); BLM, 1995, 1988, 1983).

The six wilderness areas in the vicinity of the Project have no developed trails, parking/trailheads, or other visitor use facilities. These areas are generally steep, rugged mountains, with no permanent natural water sources, thus limiting extensive hiking or backpacking opportunities. Visitor use within the wilderness areas is very light, though BLM has no visitor use counts. Observations by staff and Law Enforcement Rangers indicate only 100 to 200 hikers per year within each of the wilderness areas (BLM, 2011i). More popular is vehicle camping along roads that are adjacent to the wilderness areas. RV camping near wilderness areas, with associated hiking, OHV use, photography, sightseeing, etc. accounts for up to 2,000 visitors per year (BLM, 2011i).

Long Term Visitor Areas

The BLM manages seven LTVAs: five in California and two in Arizona. LTVAs accommodate visitors who wish to camp for as long as seven consecutive months. Winter visitors who wish to stay in an LTVA must purchase either a long-term permit for $180 that is valid for the entire season or any part of the season (which runs from September 15 through April 15), or a short visit permit for $40 that is valid for 14 consecutive days. Permit holders may move from one LTVA to another within the permitted timeframe without incurring additional fees. Activities in and use of LTVAs are regulated by the rules of conduct set forth in 43 CFR subpart 8365 and the more than 30 supplemental rules that the BLM has determined are necessary to provide for public safety and health and to reduce the potential damage to natural and cultural resources of the public lands.

As indicated in Table 3.14-1, two LTVAs are located in the vicinity of the Project site: Midland LTVA and Mule Mountains LTVA. Both provide long-term camping opportunities. In addition to long-term camping, recreational opportunities at LTVAs include hiking; OHV use; rockhounding;

viewing cultural sites, wildlife, and unique desert scenery; and solitude (BLM, 2011d; BLM, 2012; Wildernet, 2011). By contrast, the landing or take-off of aircraft, including ultra-lights and hot air balloons, is prohibited in LTVAs (BLM, 2012).

Two campgrounds are located within the boundaries of the Mule Mountains LTVA: Wiley's Well and Coon Hollow Campgrounds. Both are year-round facilities with campsites, picnic tables, grills, shade ramadas, and handicapped-accessible vault toilets (BLM, 2011d). See Table 3.14-2 for use information from 2007 to 2009. According to the BLM, visitor use data for the period after 2009 is inaccurate and is currently being reanalyzed (BLM, 2011i). The BLM's Recreation Management Information System (RMIS) totals for Fiscal Year 2011 are 581,601 visits and 2,614,920 visitor days for the Eastern Riverside County Area, which extends from Palm Springs to the Colorado River and includes the Project site (BLM, 2011i).

TABLE 3.14-2
AVERAGE RECREATION USE AT DEVELOPED SITES 2007 TO 2009

Recreation Fee Site	Annual # of Camping Permits	Annual Recreation Visits
Midland LTVA	41	2,826
Mule Mountain LTVA	135	5,545
Total	***362***	***9,555***

SOURCE: BLM, 2010

Areas of Critical Environmental Concern

ACECs are shown in Figure 3.14-1 and described in Section 3.16, *Special Designations*. As indicated in Table 3.14-1, four ACECs are located near the site: Mule Mountains ACEC, Chuckwalla Valley Dune Thicket ACEC, Palen Dry Lake ACEC, and Big Marias ACEC.

Recreation activities allowed in ACECs are determined by the resources and values for which the ACECs were established, and by the associated ACEC Management Plan. Most ACECs allow low-intensity recreation use that is compatible with protection of the relevant values.

Mule Mountains and Big Marias ACECs primarily protect cultural resources while Chuckwalla Valley Dune Thicket and Palen Dry Lake ACECs protect both natural and cultural resources. These ACECs do not have recreation use facilities, but have signage to inform visitors of the special values of the areas and associated protection measures. BLM has no visitor counts for these sites, but observations and patrols indicate very low use, in the hundreds per year (BLM, 2011i).

The Bradshaw Trail

The BLM-administered portion of the Bradshaw Trail is a 65-mile Back Country Byway that begins about 35 miles southeast of Indio, California and ends about 15 miles southwest of Blythe (BLM, 2011e). The Riverside County PVVAP Trails and Bikeway map shows a route for the

Bradshaw Trail that continues east of this location through Blythe to the Colorado River (Riverside County, 2011a). The trail was the first road through Riverside County, created by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a graded dirt road that traverses mostly public land between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range. Recreational opportunities include four-wheel driving, wildlife viewing, plant viewing, birdwatching, scenic drives, rockhounding, and hiking. (BLM, 2011e).

Regional Recreation Resources

The Riverside County Regional Park and Open-Space District (RPOSD) also provides several recreational facilities in the Project vicinity. A regional trail is proposed by the County along an existing railroad line located approximately 2.5 miles northeast of the Project boundary at the closest point (Riverside County, 2010). The RPOSD also owns and operates Mayflower Park, the Blythe Marina, and McIntyre Park, each of which provides long- and short-stay RV and tent camping, showers, picnicking, fishing, and boat launching; and Miller Park and Goose Flats Wildlife Area, which provide boating and fishing opportunities (Riverside County, 2003; DesertUSA, 2012). Table 3.14-3 indicates the distances of these facilities from the Project site.

**TABLE 3.14-3
REGIONAL RECREATIONAL AREAS AND OPPORTUNITIES IN THE PROJECT VICINITY**

Recreation Area	Size (ac)	Distance from Solar Plant Site Boundary (mi)	Distance from Gen-Tie Line (mi)
Mayflower Park	24	11.5	10.6
Blythe Marina	14	13	12.3
McIntyre Park	87	15.1	12.1
Miller Park	5	17.9	12.5
Goose Flats Wildlife Area	230	13.9	12.2

NOTE: Sizes and distances are approximate.

SOURCES: Riverside County, 2011; DesertUSA, 2012

Other Recreational Areas and Opportunities

The City of Blythe provides year-round sporting activities. The Blythe Parks Department oversees eight parks (approximately 74 acres total), including five neighborhood parks, two community parks, and one regional park. The “Big Foot Skate-board Park” is located at Todd Park. Other recreational opportunities in Blythe include the Blythe Municipal Golf Course; soccer, football, track and volleyball leagues; and indoor racquetball, basketball, aerobic activities, weight room, and summer swimming. Various nearby privately owned RV parks and campgrounds also provide recreational facilities, including a boat dock, launch ramp, fishing, swimming, horseshoe pits, wildlife observation and other active and passive recreation opportunities (City of Blythe, 2007). The Blythe Municipal Golf Course is approximately 5.3 miles from the solar plant site boundary and 4.4 miles from the gen-tie line. Other recreational facilities within the City of Blythe are approximately 9.4 miles or further from the solar plant site boundary and 7.5 miles or further from the gen-tie line.

The Cibola National Wildlife Refuge, administered by the USFWS, can be reached from the California side of the Colorado River, just south of Blythe, or, from the Arizona side, south of Quartzsite. This refuge was established in 1964 as mitigation for dam construction on the Colorado River, and provides important habitat for migratory birds, wintering waterfowl, and resident species. Recreational opportunities include hunting, fishing, wildlife viewing, and a nature trail (USFWS, 2012). The refuge is approximately 15.5 miles from the gen-tie line and over 20 miles from the solar plant site boundary.

3.14.1.3 Public Access

Recreation and motorized travel opportunities are determined, in part, by the CDCA Plan multiple-use class and by OHV area designations. The multiple-use class is based on the sensitivity of resources and kinds of uses for each geographic area. Each of the four multiple-use classes describes a different type and level or degree of use which is permitted within that particular geographic area. The BLM is also required to designate all public lands as either open, limited, or closed to off-road vehicles under Executive Orders (E.O. 11644 and E.O. 11989: Use of Off-Road Vehicles on the Public Lands), other authorities, such as the FLPMA of 1976 (43 USC 1701 *et seq.)*, BLM planning regulations in 43 CFR 1600, and the BLM Land Use Planning Handbook H-1600-1.

Multiple-Use Class

The proposed site is located in an area designated by the CDCA Plan as Multiple-use Class L. This class is intended to protect sensitive natural, scenic, ecological, and cultural resource values. Class L lands are managed to provide for generally lower-intensity, carefully controlled use of resources, while ensuring that sensitive values are not significantly diminished. For purposes of OHV management, vehicle access in Class L lands is directed toward use of approved (“open” or “limited”) routes of travel. Routes of travel include roads, ways, trails, and washes. Routes of travel, including washes, were evaluated and designated through the NECO Plan for the Project area.

OHV Routes

The CDCA Plan and the NECO Plan Amendment state that vehicle access is among the most important recreation issues in the desert. A primary consideration of the recreation program is to ensure that access routes necessary for recreation enjoyment are provided (BLM, 2002).

During the CDCA and NECO planning process, a detailed inventory and designation of routes was developed. This route designation system, along with other land management actions such as setting aside ACECs and the congressional designation of wilderness areas, has resulted in a significant loss of OHV recreation opportunities in the eastern Riverside County. Currently, there are no BLM-designated “open” OHV areas in Riverside County.

Under the CDCA Plan, travel routes are classified as *Open*, *Limited*, or *Closed* with the following definitions:

1. ***Open Route:*** Access by motorized vehicles is allowed.
2. ***Limited Route:*** Access by motorized vehicles is limited to use by number of vehicles, type of vehicle, time or season, permitted or licensed, or speed limits.
3. ***Closed Route:*** Access by motorized vehicles is prohibited except for authorized use.

As required by the CDCA Plan, the NECO Plan Amendment created a detailed inventory of existing routes within the NECO planning area that were officially designated as *Open*, *Limited*, or *Closed* as part of the NECO Plan Amendment routes of travel system. The BLM's Palm Springs-South Coast Field Office (PSSCFO) is currently completing the GPS documentation of route-specific designations and implementing route signing on the ground. A route has high significance if it provides access to other routes, historical sites, or recreational areas. Recreation uses in the eastern part of Riverside County include back country driving, photography, camping, rockhounding, and hiking.

The Project site is traversed by one major designated open route, No. 661085, which is a north/south link between I-10 and Arlington Mine Road to the north, and provides an important link that forms a looped route around the east and west side of the Palen-McCoy and Rice Valley wilderness areas, respectively. The length of the route within the Project site is approximately 2 miles. Another designated open route, No. 660835, traverses approximately 1.3 miles of the Project site near the eastern boundary. Routes of travel other than washes are shown in Figure 3.14-2. Several additional routes would be crossed by the proposed gen-tie line.

The BLM has no traffic counters or other means to accurately determine use of routes in the vicinity of the Project site. Observations by BLM staff and Law Enforcement Rangers indicate that use is relatively low on routes through or adjacent to the Project site, not exceeding 200 to 300 visits per year (BLM, 2011i). Recreation and vehicle use is generally limited to the cooler months of September through May. Use is nearly non-existent during the summer months. Recreational vehicle use consists of touring in passenger cars, SUVs, motorcycles, and ATVs. Some camping may occur in the vicinity of the site, but most use is of short duration and by local residents. More attractive recreation opportunities occur in areas where BLM has provided facilities such as the Midland LTVA, ACECs, or other scenic, natural, or cultural attractions.

Washes Open Zones

Motorized vehicle access in washes was also addressed by the CDCA Plan and further addressed or redefined in the 1982 Amendment to the CDCA Plan and the NECO Plan Amendment. As part of the land use planning process, MUC designations were assigned to regions throughout the CDCA. Areas designated Class L (limited) and Class M (moderate) were designated as "washes open zones" unless specifically designated as limited or closed to vehicle use. As stated in the NECO Plan Amendment, "all navigable washes not individually inventoried and mapped on public lands would be designated as open as a class except where such washes occur within a washes closed zone" (BLM, 2002, p. 2-77). Since there are no OHV *Open Area* designations within the PSSCFO service area, motorized travel available to the public in the NECO planning area is restricted to authorized routes of travel with the exception of washes open zones.

The BLM has not inventoried or analyzed specific washes in the Project area as to their navigability, but by the above definition, all or portions of McCoy Wash may be considered navigable; however, the Project site does not transect the McCoy Wash.

3.14.2 Applicable Regulations, Plans, and Standards

3.14.2.1 Federal

The Project would be located partially on BLM-administered lands. The following is a discussion of the federal plans and policies that would be applicable to the BLM-administered lands on the Project site.

Federal Land Policy and Management Act

FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the Project is that Title V, §501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy. Under FLPMA, the BLM is responsible for the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and that takes into account the long-term needs of future generations for renewable and non-renewable resources. Among those uses, FLPMA recognizes that the public lands should be managed in a manner that will provide for outdoor recreation.

California Desert Conservation Area Plan

The 25 million-acre CDCA contains over 12 million acres of public lands spread within the area known as the California Desert, which includes the following three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. Approximately 10 million acres of the CDCA public lands are administered by the BLM.

The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each of the plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

The CDCA Plan defines multiple-use classes for BLM-managed lands in the CDCA, which includes the land area encompassing the proposed Project location.

Northern and Eastern Colorado Area Plan Amendment

The NECO Plan Amendment intends to protect natural resources while balancing human uses of the California portion of the Sonoran Desert ecosystem. Lands within the planning area are popular for hiking, hunting, rockhounding, and driving for pleasure. The plan amendment's inventory of officially designated existing routes within the planning area restricts motorized travel to these authorized routes, with the exception of washes open zones, in order to protect off-route resources.

3.14.2.2 State

There are no state regulations that are applicable to recreational resources within the vicinity of the Project site.

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3.15 Social and Economic Setting

This section describes the social and demographic background and existing conditions in areas surrounding the Project site, including the City of Blythe and the broader eastern Riverside County and neighboring La Paz County, Arizona. Additionally, this section discusses applicable plans, policies, and regulations that represent the social aspirations, community characteristics, and desired lifestyle, values, and goals of the stakeholders. These plans, policies, and regulations are necessary to understanding social group concerns in the context of renewable energy development. Information in this section is based on data obtained from national and regional sources, including the United States Census Bureau, the U.S. Bureau of Economic Analysis (BEA), and the California Employment Development Department (EDD). No comments and concerns related to socioeconomic conditions were raised during the scoping process (see Appendix B).

3.15.1 Environmental Setting

The Project site is located in eastern Riverside County, approximately 10 miles northwest of the City of Blythe. The site and its immediately adjoining areas are vacant, with no existing population or housing. Areas of potential social and economic effects include Riverside County, the portion of Chuckwalla Census County Division (CCD) (a Census-designated county subdivision) excluding the state prisons (Ironwood and Chuckawalla Valley State Prisons), Blythe CCD (formerly Palo Verde CCD), City of Blythe, and La Paz County, Arizona. Chuckwalla CCD and Blythe CCD together correspond generally to “Eastern Riverside County,” as defined in Riverside County General Plan (Riverside County, 2003). The selection of these planning areas for analysis is based in part on potential source area for construction workforce and in part on data availability, as discussed below.

The Project includes the construction, operation, maintenance, and ultimately the closure and decommissioning of a solar energy generating facility. The expected source area for the Project’s construction workforce is the primary determinant of the affected social and economic environment associated with the Project. As discussed in more detail in Section 4.15, *Social and Economic Impacts*, the origin of Project workers likely would be a central factor determining the magnitude and extent of the Project’s potential socioeconomic impacts to the local and regional economy and communities. The direct benefits of employment and higher personal incomes will primarily benefit the communities where workers and their families reside since that would likely be where they spend the majority of their earnings. Workers’ spending for goods and services also would have an indirect impact on the communities and economies where that spending occurs.

If there is an insufficient number of suitable workers to staff the proposed action locally or in the region, then the Project could attract individuals to relocate to the area (either temporarily or permanently), which consequently could result in increased demand for housing and local services.

There is little available research and analysis providing guidance for determining the socioeconomic impact area boundaries for power facilities. The widely referenced Electric Power Research Institute (EPRI) analysis (EPRI, 1982) is generally cited as showing that workers may commute as much as two hours each direction from their communities rather than relocate.

However, simple extrapolation of the EPRI study findings may overestimate the likelihood of construction workers commuting *daily* for Project-related employment and appears to misrepresent the cited EPRI report findings. The EPRI distinguishes between “daily commuting,” “weekly commuting,” and relocation (or in-migration). The EPRI study also acknowledges a prevalence of weekly commuting for power projects and reports 1.42 hours as the average “construction workers maximum daily commuting time” observed in 12 case studies. The study reports that the average maximum daily commute distance was 73 miles.[1] The report also identifies other factors (e.g., quality of life) determining the amount of commuting (daily and weekly) versus relocation.

In addition, from its case studies, the EPRI also determined that “[o]verall, the proportion of in-migrants ranges from 5 to 50 percent for construction workers and 5 to 84 percent for operating staff.” Furthermore, the study also observed that: “(1) More in-migration is required in rural, remote areas; (2) The existence of a regional work force experienced in power plant construction reduces in-migration; (3) Weekly commuting is more widely practiced in the West, or in rural areas” (EPRI, 1982, p. V-2).

For purposes of socioeconomic analysis, and as a conservative assumption recognizing the rural nature of eastern Riverside County, a 2-hour travel radius is used to define the outer limits of the study area. It is likely that most construction workers would come from western Riverside County, which has the largest concentration of construction workers close to the Project site (see Section 3.15.2, below), and some of those workers may commute up to 2 hours each way. However, as described in the EPRI report, many workers are also likely to engage in weekly commuting or otherwise temporarily relocate to the Blythe area while working at the Project site.

Figure 3.15-1 depicts a map of areas within 60, 90, and 120 minutes of travel time from the Project site. As shown in this figure, areas of up to 2-hour travel time include eastern Coachella Valley (Palm Springs and communities to the east), Desert Center, and the City of Blythe in Riverside County and Ehrenberg and Quartzsite in La Paz County, Arizona.

Economic and employment data are generally available only for counties or metropolitan statistical areas (MSAs) consisting of whole counties. For this analysis, therefore, the socioeconomics regional study area consists of Riverside County, California, and La Paz County, Arizona. Where important additional data are available for Riverside-San Bernardino-Ontario MSA, consisting of Riverside and San Bernardino counties, they are used for reference. With respect to housing

[1] This estimate was strongly influenced by one project (Laramie River) that reported a maximum daily commute distance of 115 miles.

analysis, data for counties are supplemented with those for cities and communities of Blythe, California, and Ehrenberg and Quartzsite, Arizona.

The 2-hour travel area also extends into parts of Maricopa County in Arizona and San Diego, Imperial, and San Bernardino counties in California. However, given that there are no major urban centers in these counties that would be located in the 2-hour travel area, they are not included in this analysis.

Per guidelines shown in BLM Land Use Planning Handbook, Appendix D, the analysis of a proposed action of this type needs to consider existing socioeconomic conditions and impacts on several geographic scales. As noted above, at the regional scale, this analysis examines data for Riverside and La Paz counties, as well as Riverside-San Bernardino-Ontario MSA, where appropriate.

At the local scale, the analysis examines the three nearest communities of Blythe, California (approximately 13 miles southeast of the site), Ehrenburg, Arizona (approximately 14 miles east of the site), and Quartzsite, Arizona (approximately 30 miles east of the site). These represent the major communities located within an hour's travel of the site.

3.15.1.1 Population

Population data for Riverside County, the portion of Chuckwalla CCD excluding state prisons, Blythe CCD, the City of Blythe, La Paz County, and Colorado River Indian Reservation are shown in Table 3.6-1 in Section 3.6, *Environmental Justice*. Additional population estimates and recent growth trends for both the regional and local study areas are summarized in Table 3.15-1. Historical data (1990, 2000, and 2010 census data) are shown for the two counties and the three major communities. Projections for future growth are prepared for counties by the respective states (California Department of Finance and Arizona Department of Administration), but not for cities.

As shown in Table 3.15-1, the population of Riverside County grew rapidly between 1990 and 2000 and also between 2000 and 2010, with the majority of the growth taking place in western Riverside County. The City of Blythe grew rapidly from 1990 to 2000, due in part to the annexation of the two state prisons (Ironwood and Chuckawalla Valley State Prisons). However, the city's household population (non-institutionalized population) also grew rapidly in the 1990s. This growth slowed markedly between 2000 and 2010.

The population of La Paz County, Arizona, grew rapidly between 1990 and 2000 and then slowed in 2000s. The community of Ehrenberg, located across the Colorado River from Blythe, grew moderately during the 1990s and 2000s. The town of Quartzsite, however, grew nearly 80 percent from 1990 to 2000, then its growth slowed in the 2000s.

The forecasted population trends for Riverside and La Paz counties are also shown in Table 3.15-1. Population growth in Riverside County is expected to remain high over the next few decades, though slower than in the 2000s. The growth rate is projected to be about 33 percent between

TABLE 3.15-1
HISTORICAL AND PROJECTED POPULATION OF THE STUDY AREA

	Census			State Projections		
	1990	**2000**	**2010**	**2020**	**2030**	**2040**
Riverside County, CA	1,170,413	1,545,387	2,189,641	2,904,848	3,507,498	4,103,182
10-year Growth	---[b]	*32.0%*	*41.7%*	*32.7%*	*20.7%*	*17.0%*
Blythe City, CA[a]	8,428	20,465	21,516	---	---	---
Household Pop.	8,269	11,954	12,972	---	---	---
10-year Growth	---	*44.6%*	*8.5%*	---	---	---
La Paz County, AZ	13,844	19,715	20,489	25,487	28,074	29,715
10-year Growth	---	*42.4%*	*3.9%*	*24.4%*	*10.2%*	*5.8%*
Ehrenberg CDP[c], AZ	1,226	1,357	1,470	1,486	1,543	1,580
Household Pop.	1,196	1,357	1,470	---	---	---
10-year Growth	---	*13.5%*	*8.3%*	*1.1%*	*3.8%*	*2.4%*
Quartzsite, AZ	1,876	3,354	3,677	4,317	4,748	5,022
Household Pop.	1,866	3,354	3,595	---	---	---
10-year Growth	---	*79.7%*	*7.2%*	*17.4%*	*10.0%*	*5.8%*

NOTES:
a Total population of Blythe City includes two state prisons, Ironwood State Prison and Chuckawalla Valley State Prison.
b Household population excludes population in group quarters, such as prisons
c Census-designated place

2010 and 2020, and then fall to 21 percent between 2020 and 2030. La Paz County is forecast to grow by over 24 percent from 2010 to 2020 and by 10 percent from 2020 to 2030.

3.15.1.2 Housing

Current (2010) housing conditions for the regional and local study areas are summarized in Table 3.15-2. The three major communities located within a 1-hour commute of the site are shown, as well as data for both Riverside and La Paz counties.

In 2010, Riverside County had 800,707 housing units, with a vacancy rate of 14.3 percent. CT 469, the rural area of Chuckwalla CCD, had 1,161 units, with a vacancy rate of 37.0 percent. Blythe CCD, which includes the City of Blythe and other areas of Palo Verde Valley, had 6,140 units (of which 5,473 units were in the city), with a vacancy rate of 16.6 percent (17.5 percent in the city). The higher vacancy rates in eastern Riverside County result from many units maintained for seasonal or recreational use and from slower population growth, as discussed in the previous section.

La Paz County (including the portion of Colorado River Indian Reservation in Arizona) had 16,049 housing units and vacancy rate of 42.7 percent. The two communities near Blythe, Ehrenberg and Quartzsite, have 948 and 3,378 units, respectively, and vacancy rates of 32.0 percent and 40.0 percent.

TABLE 3.15-2
HOUSING PROFILE OF THE REGIONAL STUDY AREA (2010)

(Housing units, except as noted)	Riverside County, CA	Census Tract (CT) 469 (Part of Chuckwalla Valley CCD)[a]	Blythe CCD, CA[b]	Blythe City, CA[c]	La Paz County, AZ[d]	Ehrenberg Census-Designated Place (CDP), AZ	Quartzsite Town, AZ
Total Housing	800,707	1,161	6,140	5,473	16,049	948	3,378
Occupied Housing	686,260	732	5,123	4,513	9,198	645	2,027
Percent Owner Occupied	67.4%	66.3%	52.0%	52.2%	76.9%	62.8%	84.4%
Percent Renter Occupied	32.6%	33.7%	48.0%	47.8%	23.1%	37.2%	15.6%
Vacant Housing	114,447	429	1,017	960	6,851	303	1,351
Percent Vacant	14.3%	37.0%	16.6%	17.5%	42.7%	32.0%	40.0%
Vacant for Seasonal, Recreational, or Occasional Use	50,538	249	342	448	5,318	215	1,087
Vacant for Sale	18,417	68	108	100	370	22	106
Vacant for Rent	23,547	57	329	248	586	47	78

NOTES:
[a] Rural areas of Chuckwalla Valley CCD; excludes state prisons and Colorado River Indian Reservation.
[b] Formerly Palo Verde CCD; excludes state prisons.
[c] Incorporated Blythe city; housing data exclude group quarters.
[d] Includes the part of Colorado River Indian Reservation that is located in Arizona.

SOURCE: U.S. Census Bureau, 2011.

Temporary Housing Resources

Rental Homes

As shown above in Table 3.15-2, vacancy rates are high in the study area. The 2010 Census reports that, on April 1, 2010, 17.5 percent or 960 units in the City of Blythe were vacant. Of these, 448 units were vacant for seasonal or recreational use, 100 units were for sale, and 248 units were for rent (other vacant units included sold or rented units, but not yet occupied, and vacant for unspecified reason). An additional 81 units in the surrounding Blythe CCD (Palo Verde Valley and Mesa) were vacant for rent. Ehrenberg and Quartzsite also had large numbers of vacant units (303 and 1,351 units, respectively), but most of these were for seasonal or recreational use, with 22 and 106 units for sale and 47 and 78 units for rent. Vacant units for rent in 2010 in the four communities totaled 454 units.

Hotel and Motel Accommodations

In addition to existing residential units, construction workers and operational workers could use other local lodging facilities as temporary housing. Temporary housing in the form of hotel/motel rooms are typically concentrated in urban areas or near major transportation nodes. For the purposes of this analysis, only those hotels in the communities closest to the proposed action were tabulated under the assumption that construction and operations workers would congregate in this area for ease of commuting.

Data compiled by Smith Travel Research for hotels and motels with 15 or more rooms identified 19 hotels in Blythe with a total of 878 rooms in 2008, which represents the most current available data (Smith Travel Research, 2008, as cited in Genesis Solar, LLC, 2009). Blythe is the only community in California with hotels or motels with 15 or more rooms within 1 hour’s driving distance. Other hotels and motels are located in Ehrenberg (84 rooms) and Quartzsite, Arizona (totaling 52 rooms), for a total of 1014 rooms in the three communities (Best Western, 2012; CalHotels.us, 2012).

The extent that the local motel and hotels within the local study area could provide temporary housing for MSEP construction workers would depend both on current room rates and occupancy rates. Typical room rates for most of the hotel/motels are currently relatively inexpensive during the off-season with quoted rates of $60 to $95 per night (not including tax). Provided operators maintain comparable rates, these local hotel and motel rooms would provide an option for temporary housing, particularly for workers that might be willing to share accommodations.

The average annual occupancy rate for hotels in Riverside and San Bernardino counties in 2007 was 70.8 percent (PK Consulting, 2008 as cited in Genesis Solar, LLC, 2009). Applying this rate to the total number of hotel rooms identified within the local study area suggests that, on average, in 2008 a total of 296 unoccupied rooms were available for rent in the local study area. However, given the seasonality of local tourism to the area, it is considered likely that higher occupancy and room rates would apply during the winter season (December to March), while higher vacancy rates and lower room rates would apply during the off-season (summer and early fall) when very hot temperatures persist in the area.

Considerable additional hotel and motel facilities are available in the other communities located within 1 to 2 hours’ drive of the MSEP site, including Indio, Palm Desert, Indian Wells, Rancho Mirage, Desert Hot Springs, Palm Springs, and several other small communities. Another 165 hotels with a total of 14,842 rooms were identified in these communities (Smith Travel Research, 2008 as cited in Genesis Solar, LLC, 2009). Applying the 2007 average occupancy rate (70.8 percent) suggests that, on average, 4,334 unoccupied rooms are available for rent within 1 to 2 hours’ drive of the MSEP site.

Although eastern Coachella Valley (Palm Desert, Indio, and points east) has a substantial number of hotel and motel accommodations, the attractiveness of these resources for construction workers is low, due to the great distance of nearly 2 hours of travel time from the Project site. Furthermore, given their location near business and recreation centers, it is likely that these hotels and motels would have higher room rates and, therefore, would not be suitable temporary housing for MSEP workers.

Campgrounds and RV Parks

In addition, other housing opportunities are available in the form of RV facilities, mobile home sites, and campgrounds. Under some circumstances, these types of facilities could be usable by MSEP construction workers as temporary housing. Generally their lower costs for overnight use could make them attractive as a potential temporary housing resource. Particularly for construction workers who may own their own RV or trailers, RV parks with utility hook-ups and other amenities would be more suitable for use during the summer and could serve as a longer-term rental for workers who prefer a weekly commute.

There are at least 5 RV parks located in the vicinity of Blythe, with a combined total of about 840 spaces (RV Park Reviews, 2012). RV parks in Blythe tend to be located along the Colorado River and receive higher levels of use during the summer. Research on small sample of these RV parks suggests that, while they have a large number of spaces, many are occupied by year-round residents or are privately owned and, therefore, would not be available for use by construction workers (Genesis Solar, LLC, 2009). Additional RV parks are located in Ehrenberg and Quartzsite, Arizona, approximately 4 miles and 20 miles east of Blythe, respectively. The Quartzsite Chamber of Commerce states there are more than 70 campgrounds in the vicinity of the community that are typically occupied between October and March, with visitors attracted to the gem, mineral, and swap meet shows which are popular tourist attractions in the area (Quartzsite Business Chamber of Commerce, 2010).

BLM operates two campgrounds in the general vicinity of the local study area: Wiley's Well Campground and Coon Hollow Campground, both located south of I-10 on Wiley's Well Road within the Mule Mountain LTVA. Except for "special areas" with specific camping regulations, vehicle camping is allowed anywhere on BLM-administered land within 300 feet of any posted Open Route. However, there are no facilities in these locations, and there is a 14-day limit for camping in any one location. After 14 days, campers wishing to stay in the area longer are required to move 25 miles from their original camp site. Long-term camping is available by permit in LTVAs on BLM lands between September 15 and April 15 (from April 16 to September 14, there is a 14-day limit within any 28-day period). There are two LTVAs located in the vicinity of Blythe and the Project site: Mule Mountain, within which camping is only allowed at designated sites within the Wiley's Well and Coon Hollow campgrounds, and Midland, located north of the City of Blythe. BLM also operates another LTVA within the local study area at La Posa, south of I-10 near Quartzsite, Arizona (BLM, 2007). Although LTVAs are generally intended for recreation use only, BLM may allow temporary LTVAs to be established at the site for Project employees for the duration of Project construction.

3.15.2 Economic Conditions

3.15.2.1 Employment

Regional employment statistics by industry sector for 2010 are summarized in Table 3.15-3. In the Riverside-San Bernardino-Ontario MSA, which consists of Riverside and San Bernardino counties, and in Riverside and La Paz counties, the government sector (federal, state, and local) employs the most workers among the two-digit NAICS (North American Industry Classification System) codes, accounting for around 20 percent in the MSA and Riverside County and over 31 percent in La Paz County. Other important industries in the region include retail trade, leisure and hospitality services, educational and health services, and professional and business services. Although some data for La Paz County have been suppressed to preserve confidentiality, the leisure and hospitality industry clearly accounts for most of the 1,220 workers

TABLE 3.15-3
EMPLOYMENT BY INDUSTRY GROUP – 2010

NAICS Code	Industry	Riverside-San Bernardino-Ontario, CA MSA (2010)	Portion of Total (%)	Riverside County, CA (2010)	Portion of Total (%)	La Paz County, AZ (2009)	Portion of Total (%)
11-000000	Total Farm	14,800	1.3	12,800	2.4	309	4.2
10-000000	Mining and Logging	1,000	0.1	400	0.1	---[a]	---
20-000000	Construction	59,500	5.3	35,600	6.6	242	3.3
30-000000	Manufacturing	84,600	7.5	38,000	7.1	155	2.1
41-000000	Wholesale Trade	48,800	4.3	19,100	3.6	97	1.3
42-000000	Retail Trade	154,600	13.7	78,200	14.6	1,314	17.7
43-000000	Transportation, Warehousing & Utilities	66,500	5.9	19,500	3.6	131	1.8
50-000000	Information	15,900	1.4	10,200	1.9	---	---
55-000000	Financial Activities	41,100	3.7	19,300	3.6	503	6.8
60-000000	Professional & Business Services	121,500	10.8	50,600	9.4	443	6.0
65-000000	Educational & Health Services	133,800	11.9	58,600	10.9	330	4.4
70-000000	Leisure & Hospitality	122,100	10.8	68,500	12.8	---	---
80-000000	Other Services	37,500	3.3	18,100	3.4	340	4.6
90-000000	Government	224,300	19.9	107,800	20.1	2,337	31.5
	Total--All Industries	1,126,000	100.0	536,600	100.0	7,421	100.0

NOTE. Data for Riverside-San Bernardino-Ontario MSA and Riverside County are for wage and salary employment only; data for La Paz County, AZ, include the self-employed and proprietors, as well as wage and salary employment. Total wage and salary employment in La Paz County in 2009 was 5,741.

[a] Data not reported to avoid disclosure of confidential information or due to small sample size (less than 10).

SOURCE: EDD, 2011; U.S. Bureau of Economic Analysis (BEA), 2009

not included in the industries with disclosed data. Educational, health, and business services account for a lower proportion of workers in La Paz County than in Riverside County.

3.15.2.2 Gross Domestic Product and Personal Income

A region's gross domestic product (GDP) is the total value of all goods and services produced annually in that region. A region's total personal income is the sum of all income received by its residents, including wages, supplements to wages, dividends, interest, rental income, transfer payments, and proprietors' income. The two values differ depending on the amount of business investment in the region and on imports from and exports to other regions. The BEA publishes GDP data for the nation, states, and MSAs and personal income data for these areas and for counties.

In 2010, the gross domestic product of Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino counties) was $109.8 billion, representing about 6 percent of the GDP of

California (BEA, 2011). Per capita personal income (PCPI), the total personal income divided by population, in this MSA was $29,680, or about 70 percent of the PCPI for California (see Table 3.15-4). PCPIs of Riverside County alone and of La Paz County were comparable, at $29,748 and $26,317, respectively.

TABLE 3.15-4
GROSS DOMESTIC PRODUCT AND PERSONAL INCOME IN 2010

	California	Riverside-San Bernardino-Ontario, CA MSA	Riverside County, CA	La Paz County, AZ
Gross Domestic Product (GDP) (in millions)	$1,901,088	$109,818	---[a]	---
Personal Income (in millions)[b]	$1,590,279	$122,969	$63,228	$527
Per Capita Personal Income[b]	$42,578	$29,680	$29,748	$26,317

NOTES:
[a] BEA does not report gross domestic product for counties.
[b] 2010 data for California; 2009 data for other regions.

SOURCE: BEA, 2011

3.15.2.3 Labor Force and Unemployment

Labor force and employment in the study area are presented in Table 3.15-5. From January to October of 2011, the Riverside-San Bernardino-Ontario MSA had a labor force of about 1.75 million workers, of whom 1.5 million were employed, resulting in an unemployment rate of 13.8 percent (EDD, 2011). As shown in this table, the MSA's labor force grew from 2005 to 2008, before the recent recession began, and has declined since then. The relatively high unemployment rate since 2009 reflects the recession's impact, and the rate is likely to improve (decline) in future years as the regional economy recovers. Figures for Riverside County are similar to those of the MSA, since the county represents approximately half of the MSA.

In Arizona, La Paz County had a labor force of about 7,400 workers over the first 10 months of 2011, with an unemployment rate of 10.5 percent (Arizona Department of Administration, 2011; U.S. Bureau of Labor Statistics, 2011). Labor force and employment in La Paz County also reflect current economic conditions, and the unemployment rate is likely to reduce as the economy recovers.

Growth Projections

Table 3.15-6 presents labor force estimates and projections for workers in occupations that are likely to be required for the construction and operation of the Project. As most workers are expected to come from Riverside County, which has the largest concentration of workers in relevant occupations closest to the Project site, data compiled by the EDD are used. EDD reports workers by Standard Occupational Classification System (SOC), defined by the U.S. Department of Labor, as well as projections of future employment, for metropolitan areas.

TABLE 3.15-5
LABOR FORCE AND UNEMPLOYMENT IN THE STUDY AREA

	2005	2006	2007	2008	2009	2010	2011 Jan-Oct
Riverside-San Bernardino-Ontario, CA MSA							
Labor force	1,707,400	1,745,600	1,767,600	1,774,800	1,774,900	1,769,500	1,749,000
Employed	1,616,600	1,659,700	1,665,000	1,628,900	1,540,700	1,513,300	1,507,200
Unemployed	90,800	85,900	102,600	145,900	234,200	256,200	241,800
Unemployment rate	5.3%	4.9%	5.8%	8.2%	13.2%	14.5%	13.8%
Riverside County, CA							
Labor force	854,300	883,400	903,800	912,100	916,600	913,800	913,600
Employed	808,200	839,000	849,500	834,700	793,600	779,500	786,400
Unemployed	46,100	44,400	54,300	77,400	123,000	134,300	127,200
Unemployment rate	5.4%	5.0%	6.0%	8.5%	13.4%	14.7%	13.9%
La Paz County, AZ							
Labor force	7,637	7,670	7,612	7,576	7,773	7,774	7,394
Employed	7,120	7,240	7,229	7,016	7,024	7,001	6,615
Unemployed	517	430	383	560	749	773	779
Unemployment rate	6.8%	5.6%	5.0%	7.4%	9.6%	9.9%	10.5%

SOURCE: EDD, 2011; U.S. Bureau of Labor Statistics, 2011, Arizona Department of Administration, 2011

TABLE 3.15-6
WORKERS BY OCCUPATION – RIVERSIDE-SAN BERNARDINO-ONTARIO MSA

SOC (Occupation) Code	Occupational Title	2008 (Annual Average)	2018 (Projected)
17-1022	Surveyors	530	530
17-2000	Engineers	7,430	7,880
47-1011	First-Line Supervisors / Managers of Construction Trades and Extraction Workers	7,150	7,490
47-2031	Carpenters	18,380	18,910
47-2051	Cement Masons and Concrete Finishers	3,780	3,910
47-2061	Construction Laborers	17,950	19,500
47-2071	Paving, Surfacing, and Tamping Equipment Operators	410	410
47-2073	Operating Engineers and Other Construction Equipment Operators	4,460	4,640
47-2111	Electricians	5,020	4,850
47-2221	Structural Iron and Steel Workers	710	710
47-3000	Helpers--Construction Trades	3,100	3,210
49-2000	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	4,720	5,010
49-9051	Electrical Power-Line Installers and Repairers	1,540	1,720
49-9052	Telecommunications Line Installers and Repairers	3,500	3,580
51-4041	Machinists	3,400	3,340
51-4121	Welders, Cutters, Solderers, and Brazers	3,230	3,080
53-3032	Truck Drivers, Heavy and Tractor-Trailer	24,030	26,300
	Total	**109,340**	**115,070**

SOURCE: EDD, 2009; U.S. Bureau of Labor Statistics, 2010.

For construction of the Project, occupations with the largest need for workers are likely to be construction laborers, followed by equipment operators, electricians, and concrete finishers. According to EDD, there were 17,950 construction laborers in the MSA in 2008, and this number is expected to increase to 19,500 by 2018. There were also large numbers of equipment operators, electricians, and concrete finishers in the MSA, as shown in Table 3.15-6. With the exception of electricians, whose numbers are projected to decline, employment in the other occupations is expected to increase by 2018.

No county-level employment projections for La Paz County are available. Given the small percentage of construction employment in the county (see Table 3.15-3) and given the large supply of construction workers in Riverside County, it is not likely that Project construction would place a significant demand on labor in La Paz County.

3.15.2.4 Government Tax Revenues

A summary of Riverside County's revenues and expenditures for fiscal years (FY) 2009-10 and 2010-11 is provided in Table 3.15-7. As the Project would be constructed in unincorporated Riverside County, it would be the local agency receiving most of the direct fiscal impacts from the MSEP in the form of additional expenses or revenues.

For FY 2010-11, new revenues for governmental funds (General Fund and other funds for general governmental functions, excluding proprietary and special district funds) of Riverside County totaled approximately $3.05 billion, and expenditures totaled $3.23 billion (Table 3.15-7; Riverside County, 2010). The excess of expenditures over revenues was funded through the use of reserves and designations from the previous fiscal year. The largest sources of revenue are intergovernmental revenues (state and federal; $1.59 billion), charges for current services ($0.75 billion), and taxes (property, sales, and other taxes; $0.31 billion). The largest expenditure categories are public protection (sheriff, corrections, courts, and fire protection; $1.13 billion) and public assistance ($0.89 billion). The table also includes for comparison actual revenues and expenditures for FY 2009-10 (Riverside County, 2009, 2010).

A key issue of concern to local governments regarding solar energy generation projects is the exemption from property taxation on newly constructed projects. California Revenue and Taxation Code, §73 (described below in Section 3.15.3.2) excludes an "active solar energy system" from calculation of cash value subject to property taxation. Off-site electric transmission lines (gen-tie lines) are generally subject to property taxation.

Without access to property taxation on most components of a new solar energy project, the County must rely principally on sales tax revenues on construction materials and supplies to fund expenditures for public services related to the Project. Riverside County's key expenditures were on public assistance, public safety, and health. The county acknowledges that the economic slowdown may result in revenues lower than past projections which may lead to cutbacks in services.

TABLE 3.15-7
RIVERSIDE COUNTY ADOPTED BUDGET, FY 2010-11
GOVERNMENTAL FUNDS REVENUES AND EXPENDITURES

	Actual FY 2009-10		Board of Supervisors Adopted Budget FY 2010-11	
Revenues				
Financing Sources		% of total		% of total
Taxes	$296,481,866	10.4	$307,488,615	10.1
Licenses, Permits & Franchises	19,195,879	0.7	21,551,522	0.7
Fines, Forfeitures & Penalties	113,254,133	4.0	104,463,368	3.4
Revenue From Use of Money & Property	33,743,557	1.2	33,959,507	1.1
Intergovernmental Revenues	1,475,368,355	51.6	1,587,487,340	52.0
Charges For Current Services	649,032,606	22.7	745,861,392	24.5
Other In-Lieu And Other Governments	12,326,753	0.4	10,183,065	0.3
Special And Extraordinary Item	59,660	0.0	59,000	0.0
Other Revenue	258,546,368	9.0	239,118,425	7.8
Sub-total	$2,858,009,177	100.0	$3,050,172,234	100.0
Fund Balance Unreserved/Undesignated	--[a]		52,497,292	
Decreases to Reserves/Designations	--		172,134,982	
Net Change in Fund Balances[b]	276,342,750		-	
Total	$3,134,351,927		$3,274,804,508	
Expenditures				
Financing Uses				
General Government	$643,606,184	20.5	$492,161,018	15.2
Public Protection	1,098,560,030	35.0	1,128,874,139	34.9
Public Ways and Facilities	146,586,605	4.7	196,998,793	6.1
Health and Sanitation	346,402,520	11.1	402,834,664	12.5
Public Assistance	834,801,710	26.6	893,441,799	27.6
Education	21,076,112	0.7	48,820,384	1.5
Recreation and Cultural Services	355,798	0.0	333,991	0.0
Debt Service	42,962,968	1.4	47,960,270	1.5
Contingency	--	0.0	20,000,000	0.6
Sub-total	$3,134,351,927	100.0	$3,231,425,058	100.0
Increases to Reserves/Designations	--		43,379,450	
Total	$3,134,351,927		$3,274,804,508	

NOTES:
[a] Not applicable
[b] Net change in both unreserved/undesignated and reserves/designations funds. The budget does not provide details of this change.

SOURCE: Riverside County, 2009, 2010.

3.15.2.5 Stakeholders

Affected Groups and Attitudes

This section discusses some groups of individuals who could be affected by the Project, based on BLM's previous experience during the environmental review processes for other utility-scale solar projects in eastern Riverside County. Social effects to these groups and other stakeholders are discussed under Section 4.15, *Social and Economic Impacts*.

Identification of these groups does not imply that other stakeholders may not be affected by the Project or are outside of the social and environmental review process. Discussion of the affected groups is a means of highlighting and facilitating review of issues of potential significance for those stakeholders who have a particular local or regional relationship to the Project site or Proposed Action.

Blythe Area Chamber of Commerce

The Blythe Area Chamber of Commerce provides a forum for local businesses and residents on important community issues. The Chamber of Commerce maintains a directory of all the businesses in Blythe and promotes the city's business economy. The purpose of the Blythe Area Chamber of Commerce is to encourage and facilitate activities that improve the economic viability of this community, provide a forum for guidance and support, provide opportunities to inform, and seek funds necessary for implementing compatible activities that would improve this agricultural community. The Chamber of Commerce has supported other utility-scale solar projects in the Blythe area and would likely support the Project.

Blythe/Palo Verde Valley Economic Development Partnership

Desert Regional Consortium, a consortium of community colleges in Riverside County to support workforce and economic development efforts in the county, has received funding from the California Community Colleges to undertake a pilot program in the Blythe area, called Blythe/Palo Verde Valley Economic Development Partnership. The partnership consists of representatives from the City of Blythe, Palo Verde College, Blythe Area Chamber of Commerce, Riverside County, Palo Verde Unified School District, Palo Verde Irrigation District (PVID), and other community and regional organizations (Desert Regional Consortium, 2011). Members of the partnership generally have supportive attitudes towards renewable energy projects, and believe that these types of projects will help the local area's economy.

Environmental Groups

Several national and local groups, including the Sierra Club, Wilderness Society, Natural Resources Defense Council, Defenders of Wildlife, Center for Biological Diversity, and Western Watersheds Project, have expressed concerns about the siting criteria used for renewable energy projects proposed for development in sensitive biological resource areas. Environmental groups also have concerns regarding impacts on wildlife movement corridors, impacts on special status species associated with the implementation of solar panels (e.g., shading effects on species), climate change/GHG emission-related impacts on plants and wildlife, and impacts on desert hydrology and landscapes.

Recreational Users

Recreational users include OHV users, hikers, campers, and wildlife viewing enthusiasts. The recreational user group has a deep appreciation for the natural high desert landscape, and their social attitudes are participatory and protective of this resource. This group is concerned with the indirect impacts associated with the displacement of recreational lands by solar energy facilities, including the cumulative loss of land available for OHV recreational uses.

Local Private Land Owners and Residents

Although the Project would be developed mostly on BLM land, a portion of the solar plant, as well as a portion of gen-tie line, would be located on private land located immediately east of BLM land. There are other private lands north and east of the Project site. However, these lands are currently vacant, and no comments in opposition to the Project have been received from land owners during the scoping process for this Project.

Project Workers and Suppliers to the Renewable Energy Industry

The MSEP has the potential to affect both local and non-local labor force from surrounding areas in Riverside and La Paz counties. Construction and operation of the Project would require both temporary and permanent workers, which would increase demand for labor, and would present an opportunity for the sale of materials and supplies by firms in the renewable energy industry.

3.15.3 Applicable Regulations, Plans, and Standards

3.15.3.1 Federal

NEPA

Under NEPA (42 USC §4321 et seq.), an EIS must include an analysis of the proposed action's economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but does not allow for economic, social, and demographic effects to be analyzed in isolation from the physical environment.

3.15.3.2 State

California Revenue and Taxation Code §73

Assembly Bill 15, signed by the California governor in June 2011, modified and extended existing state law excluding an “active solar energy system” from calculation of cash value subject to property taxation. An active solar energy system includes PV panels, inverters, and other improvements necessary to deliver electric power for transmission or final use. The exclusion applies to new systems constructed prior to January 1, 2017, and remains in effect until a change in ownership occurs.

3.16 Special Designations and Lands with Wilderness Characteristics

This section describes special designations in the vicinity of the proposed Project (Figure 3.14-1) as well as lands with wilderness characteristics (Figure 3.16-1). Most special areas are either designated by an Act of Congress or by Presidential Proclamation, or are created under BLM administrative procedures.

BLM's National Landscape Conservation System (NLCS) designations include: National Monuments, National Conservation Areas, National Recreation Areas, National Wilderness Areas, Wilderness Study Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, Outstanding Natural Areas, Forest Reserves, or any other special designations lands described in the Omnibus Public Lands Management Act of 2009 (PL 111-11 §2002(b)).

In addition, other BLM special designations include ACECs, Cooperative Management and Protection Areas, Scenic and Back Country Byways, watchable wildlife viewing sites, wild horse and burro ranges, and other special designations identified in BLM Handbook H-1601 – Land Use Planning Handbook, Chapter III (BLM, 2005).

Specifically, the land use plan and management direction for such designations must comply with the purposes and objectives of the proclamation or act of Congress regardless of any conflicts with the FLPMA's multiple-use mandate (BLM, 2009).

The following discussion explains the relationship between the Project and the existing special designations within the vicinity of the Project, which include six National Wilderness Areas, four ACECs, one Back Country Byway, and an area found to have wilderness characteristics. It further identifies the existing laws and regulations relevant to those special designations.

3.16.1 Environmental Setting

3.16.1.1 Regional Setting

The Project would be located within the Palo Verde Mesa of the Sonoran Desert region of southeastern California, an alluvial-filled basin that is bounded by the Mojave Desert to the north and by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively, extending southwest to the Palo Verde Mountains. The Palo Verde Mesa is bounded by the Palo Verde Valley to the east, which is generally formed by the flood plain deposits of the Colorado River.

Special designations within this regional setting, as shown in Figure 3.14-1, include six components of the National Wilderness System: Palen-McCoy Wilderness (approximately 2 miles west), Rice Valley Wilderness (approximately 11 miles north), Riverside Wilderness (approximately 19 miles northeast), Big Maria Mountains Wilderness (approximately 8 miles northeast), Palo Verde Mountains Wilderness (approximately 18 miles south), and Little Chuckwalla Mountains Wilderness (approximately 15 miles southwest).

Four ACECs have been administratively designated within the vicinity of MSEP: Mule Mountains ACEC (approximately 9 miles south), Chuckwalla Valley Dune Thicket ACEC (approximately 9 miles southwest), Palen Dry Lake ACEC (approximately 17 miles west), and Big Marias ACEC, located in Arizona (approximately 12 miles east).

The eastern terminus of the Bradshaw Trail National Back Country Byway is located approximately 13 miles south of MSEP, and traverses the Palo Verde Mesa westerly for approximately 65 miles.

An area approximately 30,200 acres in size within McCoy Wash has recently been inventoried and it has been determined that wilderness characteristics exist in the northern portion of this area. The southern limits of these lands with wilderness characteristics extend approximately one mile into the northwest quadrant of Unit 2 of the Project. Figure 3.16-1 displays the relationship between the Project and this area.

There are no other special designations within the vicinity of the Project.

3.16.1.2 Project Setting

No Congressional or Administrative special designations exist at or are immediately adjacent to the MSEP. The area that is encompassed by the MSEP has undergone recent wilderness characteristic reviews, and those findings are discussed further in Section 3.16.1.3.

3.16.1.3 Wilderness Characteristics Review

The BLM will evaluate lands with wilderness characteristics through the land use planning process and when analyzing new land use authorizations. When such lands are present, the BLM will examine options for managing these lands and determine the most appropriate land use allocations for them. Considering wilderness characteristics in the land use planning process may result in several outcomes, including, but not limited to: 1) emphasizing other multiple uses as a priority over protecting wilderness characteristics; 2) emphasizing other multiple uses while applying management restrictions (conditions of use, mitigation measures) to reduce impacts to wilderness characteristics; 3) the protection of wilderness characteristics as a priority over other multiple uses. Pursuant to §201(a) of the FLPMA, all Public Lands within the California Desert District were analyzed in the 1979 wilderness inventory process to determine whether they possessed appropriate wilderness characteristics of size, naturalness, outstanding opportunities for solitude or primitive and unconfined type of recreation and other supplemental values. The Project site is contained within the CDCA Wilderness Inventory Units (WIU) #CDCA 325 and #CDCA 325B (hereafter referred to as WIU #325 and WIU #325B, respectively) (BLM, 1979).

Figure 3.16-1 displays the relationship between the MSEP and the wilderness inventory units and lands with wilderness characteristics.

WIU #325

In 1979, WIU #325 was estimated to be 500,000 acres, and is generally bounded on the south by I-10, on the west by Highway 177, on the north by State Highway 62 and the Colorado River Aqueduct, and on the east by Midlands Road, the Arizona and California Railroad line, and a gas pipeline right-of-way to I-10.

The 1979 decision established 284,730 acres of WIU #325 as having wilderness characteristics. This block of land was called the Palen-McCoy Wilderness Study Area. The California Desert Protection Act of 1994 (CDPA) designated the Palen-McCoy Wilderness. The boundary for the wilderness was similar to the boundary of the wilderness study area. The remainder of WIU #325 was determined not to have wilderness characteristics. The Project site and immediately adjacent lands were included in this category of lands without wilderness characteristics.

In April 2011, the wilderness characteristics inventory of WIU #325 was updated and was used to determine whether public lands within the proposed Riverside East Solar Energy Zone (SEZ) have wilderness characteristics. The area in the vicinity of the Project, identified as the East McCoy sub-unit (#325-1) is approximately 30,200 acres in size, of which about 27,640 acres are on public lands, and about 2,100 encompassed by the Project. It is generally bounded on the south by I-10, on the west by the foot of the McCoy Mountains, on the north by St. John’s Mine Road/Arlington Mine Road, on the east by Gas Line Road to I-10. (BLM, 2011a)

In October 2011, based on this inventory, 11,925 acres (48.3 km^2) of WIU #325-1 on the eastern side of the SEZ (in the area of McCoy Wash) was found to have wilderness characteristics. These lands are shown in Figure 3.16-1 (BLM, 2011b).

These lands with wilderness characteristics include 1,089 acres (5.1 km^2) of Unit 2. The southern limit of the lands with wilderness characteristics follows the vehicle route that goes west from Gas Line Road in Section 27, T5S, R21E, SBM.

WIU #325B

WIU #325B is located adjacent and east of WIU #325-1, as described above. The boundary between these two units in the vicinity of the Project site is Gas Line Road. In the 1979 inventory, the entire unit was found to not meet the criteria for wilderness characteristics, primarily due the lack of outstanding opportunities for solitude or a primitive and unconfined type of recreation.

In July 2010, BLM conducted a maintenance update of the wilderness characteristics of WIU #325B. Although a series of changes in conditions since 1979 were noted, the conclusion was that no changes in conditions have occurred that would warrant a finding that is different from the 1979 decision that wilderness characteristics were not present in the area (BLM, 2010a).

3.16.1.4 Designated Wilderness Areas

Designated Wilderness Areas in the vicinity of the Project are shown on Figure 3.14-1. Wilderness areas are congressionally designated and are managed pursuant to the Wilderness Act of 1964 (PL 88-577; 16 USC 1131-1136), and/or the specific legislation designating the wilderness area. In addition to the Wilderness Act of 1964, wilderness areas in the CDCA were designated and are managed through the CDPA of 1994 (PL 103-433) and the Omnibus Public Lands Management Act of 2009 (PL 111-11). A designated wilderness area is defined as having four primary characteristics, including the following:

1. Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
2. Has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
3. Has at least 5,000 acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and
4. May also contain ecological, geological or other features of scientific, educational, scenic, or historical value.

Six wilderness areas are located in the vicinity of the site and were established by the CDPA (16 USC §§ 410aaa et seq.). The Palen-McCoy Wilderness is approximately 2 miles northwest of the site, the Big Maria Mountains Wilderness is approximately 8 miles northeast, the Rice Valley Wilderness is approximately 11 miles north, the Little Chuckwalla Mountains Wilderness is approximately 15 miles southwest, the Palo Verde Mountains Wilderness is approximately 18 miles south, and the Riverside Mountains Wilderness is approximately 19 miles northeast. These six wilderness areas were designated by Congress through enactment of the CDPA and formally incorporated in the CDCA Plan through the NECO Plan (BLM, 2002a).

According to the CDPA §103(d), "The Congress does not intend for the designation of wilderness areas in §102 of this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area."

The Palen-McCoy Wilderness Area encompasses approximately 236,488 acres. Within it are the Granite, McCoy, Palen, Little Maria, and Arica Mountains, which are five distinct mountain ranges separated by broad sloping bajadas. Because this large area incorporates so many major geological features, the diversity of vegetation and landforms is exceptional. The desert wash woodland found here provides food and cover for burro deer, coyote, bobcat, gray fox and mountain lion. Desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, canyons, and rugged peaks form a constantly changing landscape pattern. State Highway 62 near the Riverside County line provides access from the north, and I-10 via the Midland Road near Blythe provides access from the south (BLM, 2011c).

The Big Maria Mountains Wilderness is 45,384 acres. The terrain varies from gently sloping bajadas to numerous rough, craggy peaks disjointed by steep canyons. The northern boundary lies south of a major drainage known as Big Wash, and the eastern edge parallels State Highway 95 and the Colorado River. The west and south boundaries follow power lines and contours along the base of the mountains. Foxtail cactus and California barrel cactus dot the landscape, and a burro deer herd relies on the river's habitat for survival. State Highway 95 provides access from the east and north via Big Wash, and by I-10 from the southwest via Midland Road and power line roads (BLM, 2011d).

The Rice Valley Wilderness is 41,777 acres and is approximately 26 miles northwest of Blythe. The broad, flat plains of Rice Valley and the northwestern tip of the steep and rugged Big Maria Mountains lie within the borders of this wilderness. A system of small dunes rising 30 to 40 feet above the surface form a long, narrow band running through the middle of the valley floor. The valley is part of a massive sand sheet which extends from Cadiz Valley through Ward Valley, representing a part of one of the largest dune systems in the California Desert. The Big Maria Mountains rise above the valley to an elevation of 2,000 feet. State Highway 62 provides access to the wilderness from the north and I-10 via the Midland Road, from the south (BLM, 2011e).

The Little Chuckwalla Mountains Wilderness is 28,034 acres and also lies south of I-10. It includes rugged mountains surrounded by a large, gently sloping bajada laced with a network of washes. To the north, a bajada gently rises to 400 feet, while the rugged mountains crest at 2,100 feet. Habitat for bighorn sheep and desert tortoise can be found in portions of this region, and the southern bajada has been identified as crucial desert tortoise habitat. Several sensitive plant species grow here, including the California snakeweed, Alverson's foxtail cactus, and the barrel cactus. I-10 provides northern access to the Little Chuckwalla's via the Ford Dry Lake exit; Graham Pass Road from the west; and Teague Well four-wheel drive route from the east. Both routes access the Bradshaw Trail to the south, which connects to Wiley's Well Road (BLM, 2011f).

The Palo Verde Mountains Wilderness is 30,605 acres, lies south of I-10 in Imperial County, and is approximately 18 miles south of MSEP. It is located 18 miles southwest of Blythe, and 5 miles west of an unincorporated town of Palo Verde. Distinguishing this wilderness are twin buttes known as Flat Tops, which stand out as a landmark against a range of jagged peaks. Palo Verde Peak is the highest point of the range rising 1,800 feet. Dry washes cut across the mountain slopes, supporting such vegetation as palo verde, mesquite, and ironwood. Clapp Spring and its palm oasis are unique to this area offering the only permanent water source to such wildlife species as desert bighorn, sheep desert tortoise and wild burros. Rather than hide among canyon walls as most springs in the desert, Clapp Spring lies in an open landscape. Saguaro cactus dot the southern part of the wilderness, a rare plant species in California (BLM 2011g).

The Riverside Mountains Wilderness is 24,004 acres and is approximately 10 miles north of Blythe. The Colorado River parallels this wilderness on its eastern edge. The landscape varies from gently sloping bajadas to steep, rugged interiors. Washes emerging from canyons divide the bajadas below. Numerous peaks in the Riverside Mountains give this small range a rough, craggy appearance. The foxtail cactus and California barrel cactus, two sensitive plant species, decorate this wilderness. A small herd of burro deer live among the Riverside range. State Highway 95 provides access to the wilderness from the east (BLM, 2011h).

Users of these wilderness areas are seeking opportunities to experience naturalness, solitude, and unconfined recreation. The areas have no developments other than sparse trails and any routes that have not been reclaimed since the wilderness designation. Little data exist on the amounts, types, and trends of visitor use experiences such as camping, hiking, or sightseeing. Recreation uses are discussed in Section 3.14, *Recreation and Public Access (Off-Highway Vehicles),* and include hunting, fishing, and non-commercial trapping. Pets are allowed, and the use of horses is permitted. Camping is permitted, but is limited to a period of 14 days. After 14 days, campers must relocate at least 25 miles from the previous site.

Motorized-vehicle access is prohibited in wilderness except as specifically provided for in the Wilderness Act and by reference in subsequent wilderness legislation (i.e., where access is required to private property, and where necessary to meet minimum requirements for the administration of the area for the purpose of the Act, including measures required in emergencies involving the health and safety of persons within the area).

3.16.1.5 Areas of Critical Environmental Concern

ACECs in the vicinity of the site are shown on Figure 3.14-1. ACECs are BLM-specific, administratively designated areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazards (FLPMA, 43 USC 1702(a); 43 CFR 1601.0-5(a)). By itself, the designation does not automatically prohibit or restrict uses in the area; instead, it provides a record of significant values that must be accommodated when BLM considers future management actions and land use proposals.

There are four ACECs located in the vicinity of the site. The 4,092-acre Mule Mountains ACEC is located approximately 9 miles south of the site. This ACEC bears dual MUC designations, M and L, and was established to manage prehistoric resources. The 2,273-acre Chuckwalla Valley Dune Thicket ACEC is located approximately 9 miles southwest of the site. This ACEC is managed as Multiple Use Class M, for wildlife habitat, specifically that of the desert tortoise. Similarly, the Palen Dry Lake ACEC is located approximately 17 miles west of the site and was established to protect cultural resources. The Big Marias ACEC, located in Arizona, is approximately 12 miles east of the site and was established to protect prehistoric archaeological features, including a high concentration of nationally significant intaglio features, and sensitive plant species (BLM, 2010b). Recreation uses allowed in ACECs are discussed in Section 3.14, *Recreation and Public Access (Off-Highway Vehicles).*

3.16.1.6 Back-Country Byways

The Bradshaw Trail is a 70-mile BLM Back Country Byway which begins about 12 miles east of the community of North Shore near the Salton Sea State Recreation Area. The trail's eastern end is about 14 miles southwest of Blythe.[1] It was the first road through Riverside County, created by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a graded dirt road that traverses mostly public land

1 This section deals specifically with special federal designations; the portions of the Bradshaw Trail recognized by Riverside County are described in Section 3.14.

between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range. Recreational opportunities include four-wheel driving, wildlife viewing, plant viewing, birdwatching, scenic drives, rockhounding, and hiking (BLM, 2011i; USDOT, 2004).

3.16.2 Applicable Regulations, Plans, and Standards

3.16.2.1 Federal

The following summarizes the federal regulations, plans and standards that would be applicable to the special designations on BLM-administered lands on and in the vicinity of the MSEP site.

Federal Land Policy Management Act of 1976

FLPMA (Public Law 94-579, October 21, 1976), is called the BLM Organic Act because it consolidates and articulates BLM's management responsibilities. Many land and resource management authorities were established, amended, or repealed by FLPMA, and it proclaimed multiple use, sustained yield, and environmental protection as the guiding principles for public land management (BLM, 2011j).

Several sections of FLPMA provide guidance regarding the establishment, management, and inventory of resource values which are considered for special designations.

Lands in the vicinity of MSEP were recently reviewed for wilderness characteristics based on §201(a) requiring the BLM to:

> *prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.*

Section 202(c)(3) requires the BLM, through the land use planning system, to "give priority to the designation and protection of areas of critical environmental concern." In §103(a), an ACEC is defined as the following:

> *An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.*

Section 603(a) of FLPMA required BLM to conduct the original inventory of wilderness characteristics, which was completed in 1979, while §603(c) stated that "once an area has been designated for preservation as wilderness, the provisions of the Wilderness Act (16 USC 1131 et seq.) which apply to national forest wilderness areas shall apply with respect to the administration and use of such designated area"

Wilderness Act of 1964

The "Wilderness Act" (Public Law 88-577; September 3, 1964) is the legislation authorizing the establishment and management of the six wilderness areas in the vicinity of Project Area. Section 4(a) states:

> …….*each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use*.

California Desert Protection Act of 1994

The CDPA (Public Law 103-433, October 31, 1994) designated 69 areas as components of the National Wilderness Preservation System on BLM-managed public lands in the California Desert. Section 103(d) states that "wilderness is a distinguishing characteristic of the public lands in the California desert" and "the wilderness values of desert lands are increasing threatened by …development." The CDPA further states that there are no buffer zones designated along with the wilderness areas: "The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, in itself, preclude such activities or uses up to the boundary of a wilderness area."

Omnibus Public Lands Management Act of 2009

The Omnibus Public Lands Management Act (Public Law 111-11, March 30, 2009) §2002(a) established the NLCS in order "to conserve, protect, and restore nationally significant lands that have outstanding cultural, ecological and scientific values for the benefit of current and future generations" to be managed by the BLM. Section 2002(c) directed the BLM "to manage the system in accordance with any applicable law (including regulations) relating to any of component of the system in a manner that protects the values for which the components of the system were designated." The Public Lands within the CDCA and components of the National Wilderness Preservation System are areas included under this authorization.

California Desert Conservation Area Plan

The CDCA is a 25-million acre expanse of land designated by Congress in 1976 through §601 of FLPMA. The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, and the need for a comprehensive plan for managing the area.

The CDCA Plan recognized the need to maintain and perpetuate wilderness resources, including plants and animals indigenous to the area, and to the extent consistent provide the above for opportunities for public use, enjoyment, and understanding, and the unique experiences dependent upon a wilderness setting, including maintaining access to these areas. The plan also directed managers to consider valid nonconforming uses and activities in the management of the wilderness so as to have the least possible adverse effect and/or wherever possible a positive effect (BLM, 1980; pg 50).

In addition, the plan established ACECs as a value management tool for the protection of special values, including cultural resources, prehistoric archaeological features, wildlife habitat, and sensitive plant species. Prior to its designation, management prescriptions are developed for each proposed ACEC. These prescriptions are site specific and include actions that the BLM has the authority to carry out, as well as recommendations for actions that the BLM does not have direct authority to implement, such as cooperative agreements with other agencies and mineral withdrawals (BLM, 1980).

Additional discussion regarding management prescriptions of specific ACECs are found in the relevant sections: 3.3, *Biological Resources – Vegetation*; 3.4, *Biological Resources – Wildlife*; and 3.5, *Cultural Resources.*

Northern and Eastern Colorado Area Plan Amendment

The NECO Plan Amendment is a landscape-scale, multi-agency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over 5 million acres and hosts 60 sensitive plant and animal species. Lands within the planning area are also popular for hiking, hunting, rockhounding, and driving for pleasure. Several commercial mining operations, livestock grazing, and utility transmission lines exist in the area as well (BLM, 2002a).

The record of decision for the NECO Plan, signed December 12, 2002, amended the 1980 CDCA Plan by formally incorporating the 23 wilderness areas (including the six in the vicinity) established by the 1994 CDPA in the CDCA (BLM, 2002b).

BLM Manual 8560, Management of Designated Wilderness Areas

This manual section identifies BLM's role in administering wilderness areas on public lands, provides policy guidance for BLM personnel, and sets the framework for wilderness management program development. It states the goals of wilderness management, as well as administrative functions and specific activities related to wilderness management.

BLM Handbook 1601-1 Land Use Planning Handbook

This handbook provides general guidance for the establishment of BLM administrative designations including those in the vicinity of the MSEP: ACECs and Back Country Byways. It specifically states that designated ACECs must be managed to protect the area and prevent irreparable damage or natural systems (BLM, 2005).

BLM Handbook 8357-1, 1993 BLM Byways Handbook

This handbook provides specific direction for BLM's Back Country Byways program, including information of Byways nomination and designation, planning criteria, visitor safety, and specifications for entrance kiosks (BLM, 2011k).

BLM Instruction Memorandum No. 2011-154

This Instruction Memorandum directs offices to continue to conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider lands with wilderness characteristics in land use plans and when analyzing projects under NEPA (BLM, 2011l).

3.16.2.2 State

Special designations refer specifically to the BLM and are not relevant to the state government.

3.17 Transportation and Traffic

This section describes existing conditions related to transportation and traffic, including applicable plans, policies, and regulations. Because the MSEP site is located in a remote area, all materials would have to be brought to the site from long distances and/or personnel would have to travel from surrounding communities within Riverside County, such as Blythe and Indio, as well as regions of Los Angeles County and towns in Arizona, such as Quartzite, Ehrenberg, and Cibola. Consequently, all MSEP-related traffic would utilize I-10 for regional travel, and Mesa Drive and Black Rock Road for site access. Therefore, the study area for this analysis of transportation and traffic includes these local roads and the I-10 in the vicinity of the MSEP.

3.17.1 Environmental Setting

3.17.1.1 Regional and Local Roadway Facilities

In the MSEP area, I-10 is classified as a freeway with two lanes in each direction. Access to the site from I-10 is through the Airport/Mesa Drive interchange. Local access to the MSEP site is from Black Rock Road, via Mesa Drive. Black Rock Road also serves as an access for the BSPP site, which is located adjacent to the MSEP site.

3.17.1.2 Existing Traffic Volumes and Levels of Service

The level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS indicators for the highway and roadway system are based on specific characteristics of traffic flow on designated sections of roadway during a typical day. For mainline freeway and roadway segments, these include overall traffic volume, speed, and density.

Several physical and operational characteristics of the roadway, such as lane configuration and flow speed (i.e., the typical speed along a roadway segment) are used to determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity ratio is calculated. These factors then are converted to a letter grade identifying operating conditions and expressed as LOS A through F. The *Highway Capacity Manual 2000*[1], published by the Transportation Research Board, includes six levels of service for roadways or intersections ranging from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) to LOS F (worst operating conditions characterized by forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions) (Transportation Research Board, 2000).

1 This manual is a common guide used for computing the capacity and quality of service of various highway facilities, including freeways, arterial roads, signalized and unsignalized intersections and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

Table 3.17-1 provides existing peak-hour traffic volumes and LOS for I-10 that would be used for indirect access to the MSEP site. As indicated below, traffic conditions along I-10, east and west of the Mesa Drive Interchange are operating at LOS A during the a.m. and p.m. peak hours.

TABLE 3.17-1
EXISTING PEAK-HOUR TRAFFIC VOLUMES AND LEVEL OF SERVICE

Roadway/Segment	Existing Conditions			
	Travel Lanes	Volume[a]	Capacity[b]	LOS
I-10 West of Mesa Drive	4	2,700	8,000	A
I-10 East of Mesa Drive	4	2,600	8,000	A

NOTES:
[a] Caltrans volumes, published 2011.
[b] Approximate two-way capacity in vehicles per hour (2,000 vehicles per hour per travel lane).

SOURCES: Caltrans, 2011; ESA, 2011.

3.17.1.3 MSEP Access

Regional Access

Interstate 10 (I-10) is a four-lane freeway that runs in an east-west alignment. I-10 provides access to multiple communities throughout Riverside County, including Blythe and Indio as well as communities in Los Angeles County and to points farther west, and communities in Arizona and to points farther east. The most recent data published by Caltrans indicates the Annual Average Daily Traffic (AADT) on the roadway in the MSEP area is about 22,000 vehicles (Caltrans, 2011). The roadway is included in the Riverside County Congestion Management Program (CMP) Roadway Network (Riverside County Transportation Commission [RCTC], 2010).

Local Access

Black Rock Road is a two-lane, two-way roadway that extends westerly from Mesa Drive parallel to, and on the north side of, I-10. Its paved width is approximately 24 feet; the road has graded shoulders on both sides. Black Rock Road intersects Mesa Drive opposite Hobson Way approximately 300 feet north of the intersection of the westbound I-10 ramps with Mesa Drive. The intersection of Black Rock Road, Hobson Way, and Mesa Drive is controlled with stop signs on the Hobson Way and Black Rock Road approaches.

Black Rock Road continues as Hobson Way east of Mesa Drive. Hobson Way continues east for approximately 11 miles then turns southwest as Riviera Drive. Riviera Drive continues for approximately 2 miles before terminating at U.S. Route 95. According to the *City of Blythe General Plan*, Chapter 4, Circulation Element, Hobson Way is considered the City of Blythe's "Main Street" (City of Blythe, 2007).

Mesa Drive is a two-lane, two-way roadway that extends north and south from I-10 at the easterly edge of the Blythe Airport. Mesa Drive between I-10 and Hobson Way is a paved road approximately 30 feet wide. From Hobson Way, Mesa Drive is a paved road approximately 70 feet wide, and extends approximately 1,000 feet north before ending in a cul-de-sac adjacent to the Blythe Airport.

Site Access

Access to the site would be from Black Rock Road via a driveway leading to the site. The driveway to the MSEP site is undeveloped and unpaved; however, the driveway would be constructed to provide a 30-foot-wide access road (two paved travel lanes occupying a 24-foot width, and 3-foot unpaved shoulders on each side) and would serve as an all-weather access for access of general and emergency vehicles, such as fire trucks and ambulances. The driveway would be located approximately 1.5 miles west of Mesa Drive along Black Rock Road, immediately south of the southern edge of the MSEP site boundary (as shown in Figure 2-2).

3.17.1.4 Public Transportation within the Vicinity of the MSEP

Public transportation within the vicinity of the MSEP consists of an airport, rail services, bicycle and pedestrian facilities. Information about those forms of public transportation follows.

Blythe Airport

The nearest airport facility to the MSEP site is the Blythe Airport. Blythe Airport is a public facility located approximately 6 miles west of the City of Blythe and approximately 1 mile south and east of the site. The airfield has been open since 1940, when it was known as Bishop Army Airfield. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base.

Blythe Airport has two operating runways, Runway 8-26 (oriented east-west), the primary runway, is 6,562 feet long and 150 feet wide. Runway 17-35 (oriented north-south) is 5,820 feet long and 100 feet wide. Today, Blythe Airport is primarily used for general aviation (i.e., flights other than military and regularly-scheduled airline service and regular cargo flights).

Current Operations

Current operations at Blythe Airport are limited. For the 12-month period ending in May 2010, aircraft operations averaged 69 takeoffs or landings per day or more than 25,000 operations per year. Of these, approximately 50 percent were characterized as transient general aviation; approximately 50 percent local general aviation and less than 1 percent military (Airnav, 2011).

According to the *Palo Verde Valley Area Plan*, which supplements the Riverside County General Plan, the Blythe Airport also is used as a base for crop spraying operations, airplane rentals, and flight instruction (Riverside County, 2008).

Future Operations

To carry out its responsibilities, in 2004 the Riverside County ALUC published an airport compatibility plan. This compatibility plan is based on the Airport Master Plan adopted by the Riverside County Board of Supervisors in 2001. The plan is based on an assumption of long-range future activity of 58,100 annual aircraft operations, including up to 2,200 airline aircraft operations. The theoretical ultimate airport activity as envisioned in the plan includes a number of large jet transport aircraft operations. Accordingly, the Airport Master Plan includes a proposal for extending Runway 8-16 to 3,450 feet westward for a total length of 10,012 feet (Riverside County ALUC, 2004).

Rail and Bus Service

There is no regional passenger railroad transportation in proximity of the MSEP area, or in Blythe; however, local bus transportation is provided by the Palo Verde Valley Transit Agency (PVVTA). PVVTA Bus Route 3 provides weekday express service from Blythe to the prison facilities on Wiley's Well Road south of I-10, and provides a bus stop at Hobson Way and Mesa Drive. Weekday bus service to this bus stop is Monday through Friday, from 5:40 a.m. to 7:40 a.m., with bus frequencies every 25 to 60 minutes. Afternoon and evening transit trips to the Mesa Drive exit are by request only, between approximately 2:30 p.m. and 5:00 p.m. (PVVTA, 2011).

Bicycle and Pedestrian Facilities

Bicycle facilities are generally classified as Class I (bicycle paths separated from roads), Class II (striped bicycle lanes within the paved areas of roadways), or Class III (signed bike routes that allow cyclists to share streets with vehicles). There are no bicycle facilities adjacent to the MSEP site; however, bicycles are allowed on I-10 from Dillon Road in Coachella to Mesa Drive in Blythe. Hobson Way from Mesa Drive east toward the City of Blythe is designated as a Class II Bikeway in the Circulation Element of the Blythe General Plan (City of Blythe, 2007). Mesa Drive and Black Rock Road are not designated bikeways.

Pedestrian facilities include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape amenities. The local roadways described above do not include any pedestrian facilities.

3.17.2 Applicable Regulations, Plans, and Standards

Construction, operation, maintenance, and decommissioning of the MSEP could affect access and traffic flow patterns on public streets and highways. Therefore, it would be necessary for the Applicant and/or the construction contractor(s) to obtain encroachment permits or similar legal agreements from the public agencies responsible for the affected roadways and other applicable ROWs. Such permits are needed for ROWs that would be affected by access road construction. For the Project, encroachment permits would be issued by Caltrans, Riverside County, and other affected agencies and companies.

3.17.2.1 Federal

49 CFR Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A through G address safety considerations for the transport of goods, materials, and substances and governs the transportation of hazardous materials, including types of materials and marking of the transportation vehicles.

3.17.2.2 State

The use of state highways for other than transportation purposes requires an encroachment permit, which an applicant can obtain through submission of Caltrans form TR-0100. This permit is required for utilities, developers, and non-profit organizations for use of the state highway system to conduct activities other than transportation (e.g., landscape work, utility installation, film production) within the ROW. The application would be forwarded to Caltrans District 8, whose jurisdiction includes the MSEP site. Part 5 of the Caltrans Traffic Manual provides Traffic Controls for Construction and Maintenance Work Zones (Caltrans, 2010). Additionally, the transport of oversize or overweight loads would require approval from Caltrans.

Congestion Management Program

The California CMP was created in 1990 by voter-approved Proposition 111. The RCTC serves as the Congestion Management Agency (CMA) of Riverside County (RCTC, 2010). As the County's CMA, the RCTC is responsible for managing the County's blueprint to reduce congestion and improve air quality. RCTC is authorized to set state and federal funding priorities for transportation improvements affecting the Riverside County CMP transportation system. Roadways in proximity to the MSEP site that are designated in the CMP roadway system include I-10.

The CMP specifies a system of highways and roadways for which traffic level of service standards are established. The CMP system includes all freeways, state highways, and principal arterials in the County. The program sets level of service standards for all CMP roadway segments and intersections. The LOS standard for all CMP roadways is LOS E; therefore the above-mentioned CMP roadways near the MSEP site have a level of service standard of LOS E. RCTC requires local jurisdictions to analyze impacts of new developments or land use policy changes on CMP facilities. RCTC periodically monitors the CMP Roadway System and records levels of service along CMP facilities; the last level of service assessment of its facilities was completed in 2009 (RCTC, 2010).

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3.18 Utilities and Service Systems

This section describes the existing utilities and associated service systems relevant to the Project. Limited utilities are available on-site. However, this section provides an overview of available infrastructure in the vicinity of the Project, as relevant to its construction, operation and maintenance, and decommissioning. As described in Section 2.3.1.3.9, no connection to a wastewater treatment provider exists or is proposed for the Project site; accordingly, there are no relevant wastewater treatment facilities to discuss in this section or related effects to analyze in Chapter 4. The information used for this analysis came from agency websites and author reviews of maps and satellite imagery of the Project area.

3.18.1 Environmental Setting

3.18.1.1 Water Supply

Water Suppliers

The PVID provides water primarily to agricultural users in the vicinity of the Project site, and PVID is the nearest water supplier to the site. PVID's canals extend across agricultural areas to the north and west of Blythe. However, the nearest canal to the Project is located about 5 miles to the southeast, at a maximum elevation of about 275 amsl. This is at least 190 feet lower than elevations at the Project site. Thus, groundwater is the sole water supply source available at the Project site.

Groundwater Availability

The availability of groundwater in support of the Project is evaluated through a water supply assessment, as well as a numerical groundwater model. Groundwater is pumped in the basin in support of private residential use and agriculture, although most agricultural supplies are based on surface water from the Colorado River. For a discussion of the water supply assessment completed in support of the Project, please refer to Section 4.18, *Utilities and Service Systems*. For a discussion of the numerical groundwater model completed in support of the Project, please refer to Section 4.20, *Water Resources*.

3.18.1.2 Solid Waste Management

The Riverside County Waste Management Department operates six landfills, has a contract agreement for waste disposal with an additional private landfill, and administers several transfer station leases (RCWMD, 2011). Among the six landfills, the Blythe Landfill is closest, located approximately 6.4 miles from the site. The next closest landfills are the Desert Center Landfill (about 48 miles from the site), Mecca II Landfill (about 82 miles from the site) and Oasis Landfill (about 87 miles from the site). Riverside County has a minimum of 15 years of capacity for future landfill disposal, and expects to maintain at least 15 years of capacity into the future (RCWMD 2011). Blythe Landfill has a total estimated permitted capacity of approximately 6 million cubic yards, with a remaining capacity of over 4 million cubic yards, and an anticipated closure date of June, 2047 (CalRecycle, 2011).

3.18.1.3 Electricity

Electricity within the vicinity of the Project site is provided by SCE. In support of the numerous renewable power projects being installed in the vicinity of the Project (and including the Project), SCE is in the process of pursuing construction of a new 157-mile-long transmission line. A ROD for the transmission line project, DPV2, was completed in July, 2011, between the BLM and the USFS (BLM and USFS, 2011). The selected alternative includes a new 500 kV transmission line that will connect the CRS west to the Cactus City Rest Area. From that point, the alignment will extend to the Devers Substation in Palm Springs, then to the Valley Substation, located in Romoland, CA. Additional equipment will be installed at the Devers Substation in order to accommodate the new transmission line.

The primary reason for installation of the DPV2 transmission line is to provide an interconnect between the various solar energy power projects proposed for the I-10 corridor and nearby areas. Accordingly, the DPV2 project includes various refinements to support transmission interconnection needs for solar projects (BLM and USFS, 2011). The DPV2 project was approved by the CPUC in November, 2009, and the CPUC issued a Mitigation Consistency Determination for the DPV2 in May, 2011, which also considered various refinements since the CPUC’s initial approval.

3.18.1.4 Stormwater

At present there are no stormwater facilities located on-site or in the immediate vicinity of the Project site (see Section 3.20 for a description of modeled existing stormwater flows during storm events at the Project site). Various stormwater facilities are anticipated to be installed in support of the BSPP, which is located immediately south of the Project site. Pending final engineering design and installation, these may include facilities to channel runoff around the BSPP site, between the array fields for the BSPP and the Project. No other stormwater facilities are currently located on-site. The McCoy Wash, which is located immediately east of the Project site, fans out onto the alluvial plain before it reaches farmland to the northwest of Blythe. Here, stormwater is channeled into existing drainages that are maintained by the PVID.

3.18.2 Applicable Regulations, Plans, and Standards

3.18.2.1 Federal

Safe Drinking Water Act

Under the Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCLs) that are applicable to treated water supplies delivered to the distribution system. MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting MCLs for drinking water. USEPA has delegated to the CDHCS the responsibility for administering California's drinking-water program. CDPH is accountable to USEPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by USEPA. The applicable state primary and secondary MCLs are set forth in 22 CCR §64431 et seq.

3.18.2.2 State

California Government Code §4216.2 Notification of Underground Work

California Government Code §4216.2 requires excavators to contact a regional notification center at least two working days before, but not more than 14 calendar days prior to beginning excavation work. Notification is required to be completed for all areas that are known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the excavator. If practical, the excavator is required to delineate, with white paint or other acceptable markings, the area to be excavated. Additional restrictions are provided for locations within 10 feet of a high priority subsurface installation. Additional provisions are applicable to emergency situations.

14 CCR Division 7.3

Title 14 of the CCR provides minimum requirements for solid waste handling and disposal within the state. The regulations implement standards for the disposal and storage of solid waste, for nonhazardous wastes, and including solid wastes from industrial sources. Specific requirements are included for the handling and disposal of construction and demolition wastes, nonhazardous contaminated soil, waste tires, nonhazardous ash, and inert debris. Additional requirements are provided for transfer and processing facilities, siting and design standards, operation, and record keeping and reporting.

22 CCR Division 4.5

Title 22 of the CCR discusses an array of requirements with respect to the disposal and recycling of hazardous and universal wastes. Specific standards and requirements are included for the identification, collection, transport, disposal, and recycling of hazardous wastes. Additional standards are included for the collection, transport, disposal and recycling of universal wastes, where universal wastes are defined as those wastes identified in 22 CCR §66273.9, including batteries, electronic devices, mercury containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements include recycling, recovery, returning spent items to the manufacturer, or disposal at an appropriately permitted facility. 22 CCR Division 4.5 also provides restrictions and standards relevant to waste destination facilities, and provides authorization requirements for various waste handlers. Note that Title 22 includes California's Universal Waste Rule, as well as other additional waste handling and disposal requirements.

27 CCR Division 2

Title 27 of the CCR implements regulations of CalRecycle and the SWRCB, with respect to disposal of wastes on land. The regulations implement a waste classification and management system, which determines whether or not wastes are compatible with containment features of specific disposal facilities, and whether or not wastes are considered hazardous. Additional requirements are included for the waste disposal sites, including construction standards, liner requirements, siting criteria, and operational management requirements. Water quality monitoring requirements are also included, along with associated contamination response programs. Finally, disposal facility closure and post closure requirements, compliance with reporting programs, and financial assurance requirements are also included.

Integrated Waste Management Act

The Integrated Waste Management Act was enacted in 1989, as AB 939. The Act required each of the cities and unincorporated portions of counties throughout the state of California to divert a minimum of 25 percent of solid waste from landfills by 1995 and 50 percent by 2000. To attain these goals for reductions in disposal, the Act established a planning hierarchy utilizing integrated solid waste management practices. The Act resulted in the creation of the California Integrated Waste Management Board, which is now known as CalRecycle. Under the Act, jurisdictions also have to submit solid waste planning documentation to CalRecycle. The Act also set into place a comprehensive statewide system of permitting, inspections, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types and amounts of waste generated.

3.19 Visual Resources

This section introduces the study area in terms of its existing value as a visual resource, and describes the applicable regulatory framework that seeks to manage and preserve scenic landscapes. Following a description of the characteristics and extent of the study area, this section focuses on determining the extent and quality of visual resources in the study area by reporting on the results of the most recent visual resource inventory completed in the study area. In addition, this section relies on the results of a site reconnaissance carried out in support of this PA/EIS. On September 7th and 8th, 2011, ESA performed a site reconnaissance in order to (1) document the visual character of the study area, (2) verify the degree and extent to which the Project site is visible from publicly accessible locations, (3) evaluate the use and accessibility of BLM facilities and wilderness areas, and (4) gather information on nighttime lighting conditions.

3.19.1 Environmental Setting

3.19.1.1 Regional Setting

The Project site is located in the Mojave Desert geomorphic province of California, also referred to as the Sonoran Desert section of the Basin and Range physiographic region of the United States.[1] The Project site is within a broad interior region of isolated mountain ranges separated by expanses of internally drained desert plains. Located on the Palo Verde Mesa, the Project site is bounded on all sides by a number of mountain ranges, except for the mesa's southeastern edge, which is elevated relative to Palo Verde Valley. Numerous desert arroyos emanating out of the surrounding mountains dissect the gently sloped, coalescing alluvial fans, eventually meeting in the center of the basin to form the southeast-draining McCoy Wash. While most of the plains in the region are internally drained, McCoy Wash drains the surrounding mountains southwest towards the Palo Verde Valley, forming a local break in the mesa as viewed from the valley. The vicinity of the Project site is visually dominated on the west by the steeply rising, barren-sloped McCoy Mountains, and on the north to northeast by the Little Maria and Big Maria Mountains. The Palo Verde Mesa is mantled by desert scrub and desert dry wash woodland, comprised largely of Sonoran creosote bush and species typical of the riparian shrub woodland community.

3.19.1.2 Visual Character

The visual character of the landscape within the region has substantial variability based on the location of the viewer and other visual variables, such as seasonal climate, atmospheric and lighting conditions, cultural modifications, and the visibility, presence, and extent of character-defining visual features. The visual quality of the landscape, visual variables, and the manner in which a viewer experiences the landscape setting (i.e., the cumulative impression felt by different types of users traveling through an area) are all factors that combine produce visual experiences

[1] California's geomorphic provinces and the physiographic regions of the U.S. are naturally defined geologic regions that display a distinct landscape or landform. These divisions are based on unique, defining features such as geology, topographic relief, climate, and vegetation. The distinction between California's geomorphic provinces and the physiographic regions of the U.S. is in the scale at which they are defined.

that are unique and difficult to quantify. However, the visual character of the region can be broadly generalized within two primary contexts: the natural landscape and the built environment (i.e., areas where cultural modifications dominate, or nearly dominate the visual character of an area).

Natural Landscape

Context photographs of the natural landscape of the Palo Verde Mesa are shown in Figure 3.19-1a from several different vantage points. Generally, the landscape can be characterized as panoramic in nature, due to the wide expanse of the landscape that is unencumbered by intervening features. From low angles of view, foreground and middleground views are greatly shortened/diminished, forming a continuous horizon line that distinctly separates the valley floor from background views of the mountains, although the prominence of the line can be blurred by distance, atmospheric haze, and/or broken up by intervening desert scrub. In this visual context, viewers are drawn to background views of the mountains, which stand in sharp contrast to the landscape character elements of form, color, and texture of the valley floor. Landscapes such as these are unencumbered and wide in scale, and accurate perceptions of distance are difficult to make. Vertical features that cut through middleground and background views—which in heavily vegetated landscape contexts could be easily overlooked—are more likely to attract the attention of an observer. The primary public roadways on the Palo Verde Mesa (Midland Road and Hobson Way) provide low-angle views of the mesa, and viewer attention is most typically drawn to prominent visual features in the foreground, or in the absence of foreground features, to the closest mountain range (such as easterly views of the Big Maria Mountains).

As viewers in the landscape gain elevation, the shape, texture and colors of the valley floor begin to attract greater attention as it occupies a greater portion of the view. Vegetation growing along the desert washes stand in contrast to the sparsely vegetated desert pavements, and in places can form bold lines in the valley floor. In elevated locations with close-range views of adjacent mountains, the landscape begins to take on a focal character, as the jagged, pyramidal outlines of the mountains and the converging desert washes draws viewer attention toward the middle of the scene. In views toward the Palo Verde Mesa, the distance and scale of the valley floor become increasingly apparent, and distant mountain ranges lose some degree of dominance in the scene, especially in circumstances of haze or cloudiness. Within the Palo Verde Mesa and surrounding mountain ranges, high-angle views are only accessible on foot, and are not available from paved public roadways within the viewshed. Intermediate-angle views are available from several OHV routes that access the mountain ranges on either side of the mesa, but such routes generally remain between mountain peaks, and avoid drastic elevation gains.

Built Environment

Context photographs of the built environment of the Palo Verde Mesa are shown in Figure 3.19-1b from several different vantage points. The built environment’s effect on the visual character of the landscape is to introduce numerous foreground and middleground elements that stand in visual contrast to the natural character of the surrounding environment. The greatest degree of development on the mesa is probably along Hobson Way, which contains the Blythe Airport, the

Blythe Energy Center, a sewage disposal plant, and a substation. Long-range, northerly views from Hobson Way are obstructed by several buildings, structures, and numerous power poles. These features tend to break up the continuity of the landscape and distract the viewer from the natural landscape elements. In some circumstances, however, such as views of agricultural fields that are not interrupted or degraded by electrical utilities or industrial-appearing structures, the built environment can have a positive influence on the aesthetic quality of views by adding pattern, color and harmony into views that would otherwise be muted in color and lacking in texture. Further, housing development designed with aesthetic considerations in mind can also add visual variety and have a locally positive influence on the visual character of an area. Built features that generally have the greatest negative influence on the visual character of the region are associated with industrial, mining, and utility-related land uses, as well as improperly sited and designed roadways.

3.19.1.3 Project Viewshed and Visibility

The study area is defined as all land areas from which any element of the Project would be visible, i.e., the Project's viewshed. The Project viewshed is shown in Figure 3.19-2, and was generated via computer-generated viewshed tools, based on numerous points that model the location and height of the proposed solar plant site and gen-tie line, and a 10-meter resolution (horizontal) USGS digital elevation model. Bolder colors in Figure 3.19-2 represent areas where the Project would be visible from a greater angle (as opposed to being viewed side-on at a similar elevation). In addition to estimating the extent and angle of visibility, the viewshed calculation is useful in determining which existing roadways and other publicly accessible vantage points are located within the viewshed of the Project site.

Because viewshed calculations do not consider the presence of intervening vegetation, structures, atmospheric haze and diminished visibility caused by distance, the visibility of the Project site was verified during a site reconnaissance. The site reconnaissance found that views of the solar plant site are not available from the City of Blythe and adjacent agricultural lands within the Palo Verde Valley. Even in locations where northwesterly views are not blocked by intervening vegetation or buildings, the location of the Project site above and behind the crest of the Palo Verde Mesa eliminates all potential views of the Project site. Further, only the gen-tie line would be visible from I-10. In northerly views from the highway, views of the solar plant site are generally blocked by foreground elements such as vegetation, structures, and signage. Even in locations along the highway where foreground elements are not present, the Project solar plant site is screened by topography. Similar viewing conditions exist along Hobson Way, which is located parallel to and just north of I-10, although northerly views may provide brief glimpses of the solar plant site which would be low-angle, distant, and partially screened. The primary public roadway along which views of the Project site would be most prominent and long-lasting would be Midland Road, which extends in a northwesterly direction from the north end of the City of Blythe.

Based on the study area, the location of public roadways, BLM facilities, and other public vantage points, seven key observation points (KOPs) were chosen in consultation with the BLM. The purpose of the KOPs was to capture representative views of the Project site, to be used in visual simulations of the Project, and as an aid in preparing visual contrast ratings of the Project. The location of the KOPs are shown in Figure 3.19-2; however, the visual characteristics of each viewpoint and the Project-related visual contrast are fully detailed in Section 4.19.

3.19.1.4 Nighttime Lighting Conditions

With the exception of southerly views towards Blythe, I-10 and Hobson Way, night skies in the vicinity of the Project on the Palo Verde Mesa are very dark and absent of any significant or substantial light sources. A nighttime reconnaissance was performed the night of September 7, 2010, at the Midland LTVA, when conditions were clear and cloudless. Stargazing conditions were excellent and skyglow from light sources to the south affected only the very lowest southerly horizon line with no noticeable adverse effect on the visibility of the nighttime sky. The most intense/bright light sources in southerly views were associated with the Blythe Airport, the Blythe Energy Center, and Palo Verde College. Other developments along Hobson Way, further south along Midland Road, and further in the distance toward the City of Blythe were less intense but greater in number. In westerly and northwesterly views, two minor unshielded light sources of unknown origin were present in the vicinity of the McCoy Wash. In all other view directions, no other light sources were visible, and none of the light sources present in the viewshed were sufficiently intense to be distracting or to noticeably reduce the visibility of the night sky and stars.

3.19.1.5 Approach to Baseline Analysis

BLM's Visual Resource Management (VRM) Policy is the agency's implementation of requirements from FLPMA and NEPA for managing scenic resources. Pursuant to FLPMA, BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. BLM Manual M-8400-Visual Resource Management (BLM, 1984), Handbook H-8410-1-Visual Resource Inventory (BLM, 1986a), and Handbook H-8431-Visual Resource Contrast Rating (BLM, 1986b) set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating Proposed Actions for conformance to the established objectives for BLM-administered public lands. The following describes the three primary elements of the BLM's VRM Policy.

Determining Visual Resource Values

The primary means to establish visual resource values are to conduct a Visual Resource Inventory (VRI), as described in BLM handbook H-8410-1. There are four VRI Classes (I to IV) assigned as a representation of the relative visual value. VRI Class I has the highest value and VRI Class IV has the lowest. VRI Class I is assigned to areas where a management decision was previously made to maintain a natural landscape, such as wilderness areas, wild sections of wild and scenic rivers, and other congressionally and administratively designated areas such as visually sensitive ACECs. Visual resource values are determined through a systematic process that documents the landscape's scenic quality, public sensitivity, and visibility. Rating units for each of these factors are mapped individually, evaluated, and then combined through an over-layering analysis. The three factors are briefly described below.

Scenic Quality: Scenic Quality Rating Units (SQRUs) are delineated based on common characteristics of the landscape. There are seven criteria used for inventorying the landscape's scenic quality within each SQRU: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and degree of cultural modification. Each factor is scored for its respective contribution to the scenic quality, the scores are summed, and the unit is given a rating of A (highest), B, or C (lowest) based on the final score.

Sensitivity Level: Sensitivity Level Rating Units (SLRU) are delineated and evaluated for public sensitivity to landscape change. Criteria used for determining level of sensitivity within each unit includes types of use, amount of use, public interest, adjacent land uses, special areas, and other factors. Each criterion is ranked high, medium, or low and an overall sensitivity level rating then is assigned to the unit.

Distance Zones (visibility): The third factor is visibility of the landscape evaluated from where people commonly view the landscape. The distance zones are divided into foreground/middleground (3 to 5 miles); background (5 to 15 miles); and seldom seen (beyond 15 miles or topographically concealed areas within the closer range distance zones).

The relationships between the rated values of scenic quality, sensitivity level, and visibility are cross-referenced with the VRI Matrix to determine the VRI Class, as shown in Table 3.19-1. VRI classes are informational in nature and provide the basis for considering visual values in the RMP process. They are considered the baseline data for existing conditions.

TABLE 3.19-1
DETERMINING VISUAL RESOURCE INVENTORY CLASSES

		Sensitivity Level								
		High			**Medium**			**Low**		
Special Areas		I	I	I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II	II	II
	B	II	III	III/IV[a]	III	IV	IV	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV	IV	IV
		Fg/mg	Bg	Ss	Fg/mg	Bg	Ss	Fg/mg	Bg	Ss
		Distance Zones								

NOTES:
[a] If adjacent area is Class III or lower assign Class III, if higher assign Class IV
Fg/mg=Foreground/Middleground
Bg=Background
Ss=Seldom seen

SOURCE: BLM, 1986a

Establishing Management Objectives

VRM Classes (defined in Table 3.19-2) are determined by considering both VRI Class designations (visual values) along with resource allocations or special management decisions made in the applicable RMP. Management objectives for each VRM Class set the level of visual

TABLE 3.19-2
VISUAL RESOURCE MANAGEMENT CLASSES

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

SOURCE: BLM, 1986a

change to the landscape that may be permitted for any surface-disturbing activity. The objective of VRM Class I is to preserve the character of the landscape, whereas VRM Class IV provides for activities that require major modification to the landscape. Thus, the allowable levels of visual change for VRM Classes I through IV tend to be decreasingly restrictive.

The VRM classes are a land use plan decision and mandate how the visual environment is to be treated in future land management actions and subsequent site-specific implementation decisions. The VRM class designations are to be assigned to all BLM public land. The VRM class designations may be different than the VRI classes assigned in the inventory. For example, an area with a VRI Class II designation may be assigned a VRM Class IV designation, based on its overriding value for mineral resource extraction, or its designation as a utility corridor.

The applicable RMP for the study area is the CDCA Plan which does not contain a visual resource element and has not established VRM Classes. When a project is proposed and there are no RMP-approved VRM objectives, Interim VRM Classes must be established in order to establish a baseline for analysis only. Interim VRM classes are developed for the area affected by the Proposed Action following guidance in BLM M-8400. If the area is also without a VRI, then one must be conducted in order to provide a baseline of data by which to analyze impacts and to consider when establishing Interim VRM Classes. This information can be found for the Project in Section 3.19.1.6 and 3.19.1.7. For a description of the Project's applicable land use plan (CDCA), as it related to visual resources, refer to Section 3.19.2.1.

Evaluating Proposed Actions

Proposed plans of development are evaluated for conformance to the VRM Class objectives through the use of the Visual Resource Contrast Rating process set forth within BLM Handbook

H-8431-1. Because this concerns the environmental consequences of the Proposed Action, this process is further described and applied in Section 4.19.

3.19.1.6 Visual Resource Inventory of the Project Area

Sources of Visual Resource Inventory Data

The BLM Palm Springs-South Coast Field Office (PSSCFO) VRI is a recently conducted large-scale visual resource inventory of BLM-managed lands extending east from Palm Springs to the Arizona border and is used as a source of baseline data (Otak Inc., 2011).

Scenic Quality Ratings

The scenic quality rating unit identified in the PSSCFO VRI for the Project area is SQRU No. 21 – Chuckwalla Valley.

The SQRU is described in the inventory as a broad, enclosed landscape surrounded on most sides by dramatic mountain ranges. It is vast and natural-appearing with vegetation that is somewhat visually dominant. The valley's form ranges from flat to gentle slopes and is characterized by vast, gently rolling open space with light brown to buff-colored soils and rock. Its medium to coarse vegetation is rounded, clumpy, and mottled in form, and brownish-green in color. Existing structures include roads, settlements, substations, and power lines.

This landscape unit was given a scenic quality rating of B, based on the combination of scores for landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications. The most influential factor in the B-quality rating was the adjacent scenery created by the surrounding dramatic and rugged peaks. Documentation of the scenic quality rating, including photographs and evaluation of scenic quality factors, is provided in Appendix F.

Visual Sensitivity

The BLM PSSCFO VRI assigned a sensitivity level of medium to the area affected by the Project (the sensitivity level rating unit was identical to the SQRU). This rating was based on relatively low levels of recreation use, a history of low-level development of private lands in the area, and use as a transportation and utility corridor. The sensitivity level was determined as medium (and not low) in recognition of the area as belonging to the CDCA, and being surrounded by BLM wilderness areas. Documentation of the sensitivity level rating is provided in Appendix F.

Distance Zones

According to the PSSCFO VRI (Otak Inc., 2011), all portions of the Project are within the foreground/middleground zone because I-10 and other public roads are located within a distance of 5 miles.

Visual Resource Inventory Classes

Based on the visual resource inventory classification matrix in Table 3.19-3, all areas of the Project are rated as VRI Class III except for the gen-tie line south of I-10 and the portion of the access road south of the southern edge of the BSPP solar plant site, which are in areas assigned VRI Class II. Scenic quality, visual sensitivity, distance zones, and VRI Classes for the Project are summarized in Table 3.19-3, and VRI Classes are illustrated in Figure 3.19-3. This indicates the lands affected by the Project have a moderate visual value.

TABLE 3.19-3
SUMMARY OF VISUAL VALUES AND MANAGEMENT OBJECTIVES

Project Component/Source	Scenic Quality Rating	Sensitivity Level	Distance Zone	Visual Resource Inventory Class[a]
Portion of the access road south of the southern edge of the BSPP solar plant site and gen-tie line south of I-10	B	High	Foreground/Middleground	Class II
Project solar plant site, the gen-tie line north of I-10, portion of the access road on the eastern perimeter and south of the BSPP, and distribution line	B	Medium	Foreground/Middleground	Class III

NOTE:
[a] As determined using the VRI classification matrix presented in Table 3.19-1

SOURCE: Otak Inc., 2011

3.19.1.7 Interim Visual Resource Management Class Recommendations

As discussed above, there are currently no VRM Classes established for lands under BLM jurisdiction within the CDCA Plan area, and VRM classes differ from VRI Classes in that they represent decisions about how the land will be managed in conjunction with resource allocations and management priorities outlined in the applicable RMP. The designation and adoption of Interim VRM classes conducted in support of a specific project is a BLM Field Office Manager decision. As required under BLM guidance, Interim VRM Classes were adopted by the BLM in connection with SCE's DPV2 500 kV Transmission Line Project EIR/EIS (CPUC, 2006). The existing Devers-Palo Verde No. 1 500kV transmission line is approximately 1 mile south of and parallel to I-10 in the vicinity of the gen-tie line. The Interim VRM Classes determined for the DPV2 Project will be carried forward into this analysis for consistency with previous management decisions. Accordingly, areas adjacent to and south of I-10 along the gen-tie line would be managed in accordance with Interim VRM Class III objectives, and the transmission ROW between the southern boundary of the BSPP solar plant site and approximately 400 feet north of I-10 would be managed in accordance with Interim VRM Class II objectives (CPUC, 2006).

However, the Interim VRM classes for the DPV2 Project do not cover the majority of the areas affected by the Project, including the solar plant site, the portion of the gen-tie line and access road adjacent to the east side of the BSPP, and the distribution line. For these areas, it is recommended that they be managed according to an Interim VRM Class III designation based on the following: (1) the proposed Project area was assessed as VRI Class III, and (2) the Multiple Use Class of the Project area is "L" (limited), which allows for consideration of wind or solar electrical generation facilities after NEPA requirements are met. It is the field manager's determination upon approval of this recommendation that the area be designated as Interim VRM Class III. The Field Manager for the BLM Palm Springs/South Coast Field Office has agreed with this recommendation, as documented in Appendix F.

3.19.2 Applicable Regulations, Plans, and Standards

3.19.2.1 Federal

CDCA Plan

Under FLPMA §601, the BLM has developed the CDCA Plan to "provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." Central to the CDCA Plan is the establishment of Multiple Use Classes that govern the management of the public lands based on the sensitivity of the resources and types of uses for each geographic area. As discussed in greater detail in Section 3.10, *Lands and Realty*, multiple use classes are divided into four categories, each of which have specific guidelines for the management of specific resource or activity areas contained and discussed in each of the CDCA Plan Elements.

The proposed Project site is located within lands designated "Class L," or limited use. Class L protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that these sensitive values are not significantly diminished.

There is no stand-alone visual resource plan element within the CDCA; however, the visual values are addressed within the recreation element of the CDCA Plan. According to the recreation element, the BLM will take the following actions to effectively manage for activities involving the alteration of the natural character of the landscape (BLM, 1980):

1. The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple use class guidelines.

2. Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the BLM's contrast rating process.

The contrast rating process is a tool used to determine the extent of visual impact that proposed resource management activities would create in a landscape. It serves as a guide for reducing visual impacts to acceptable levels as defined by the visual management objectives and multiple use class guidelines. Applicable visual resource management objectives are identified above in Section 3.19.8.1, and defined in Table 3.19-2. The visual contrast rating process is further discussed in Section 4.19.

3.19.2.2 State

No applicable state regulations, plans, or standards related to visual resources were found.

3.20 Water Resources

This section describes the existing hydrology/drainage including the extent of jurisdictional waters, water quality, groundwater, and flooding, in the Project area, including key issues relevant to the impact analysis provided in subsequent chapters. This section also identifies regulations, plans, and policies including federal, state, and local laws related to water resources that are relevant to the MSEP.

3.20.1 Environmental Setting

The MSEP site is located in the greater Colorado Desert Geomorphic Province. This Province is characterized by isolated mountain ranges separated by broad alluvial-filled basins of Cenozoic-age sedimentary and volcanic materials overlying older rocks. Much of the Colorado Desert lies at low elevations, with some areas below sea level.

Specifically, the Project site is located in the alluvial-filled basin of the Palo Verde Mesa in eastern Riverside County. Beneath the Palo Verde Mesa lies the Palo Verde Mesa Groundwater Basin (PVMGB), which is bounded by non-water-bearing rocks of the Big Maria and Little Maria mountains to the north, by the McCoy and Mule mountains to the west, and by the Palo Verde Mountains to the south. See Figure 3.20-1.

To the east are the Palo Verde Valley and the Colorado River. The Big Maria Mountains and the McCoy Mountains are the contributing watersheds to the Palo Verde Mesa. McCoy Wash, a tributary of the Colorado River, flows southeast approximately 2,000 feet north of the northeastern corner of the site. Surface water drains from the surrounding mountains toward the Colorado River. There are no perennial streams on the Palo Verde Mesa. The PVMGB encompasses an area of about 353 square miles or 226,000 acres, is tributary to the lower Colorado River, and is part of the Colorado River aquifer (DWR, 2004).

The Palo Verde Mesa has a generally low relief until near the surrounding mountains. There are two distinct river-cut terraces that form a topographic break westward from the Colorado River. The MSEP site is located on the uppermost of the two terraces that comprise the mesa. Approximately 3 miles east of the eastern site boundary, a sharp break in the slope forms the boundary between the Palo Verde Mesa and the Palo Verde Valley, which is 80 to 130 feet below the mesa. In this region, the Palo Verde Valley is roughly equivalent to the recent historic floodplain of the Colorado River.

The ground surface slopes gently downward in a southeast direction away from the McCoy Mountains at a gradient of less than 1 percent. MSEP site elevation ranges from about 720 feet along the western edge of the site, to approximately 580 feet along the southeastern corner of the site. Grades on site are generally gently sloping, at or less than 1.5 percent. However, steeper grades do occur on site in some areas.

3.20.1.1 Climate and Precipitation

The climate on the Palo Verde Mesa, which is classified as a "low desert," is characterized by high aridity and low precipitation. The region experiences a wide variation in temperature, with very hot summer months with an average maximum temperature of 108 ºF in July and cold, dry winters with an average minimum temperature of 66.7 ºF in December. The Blythe area receives approximately 3.5 inches of rainfall per year. The majority of the rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall events tend to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Annual precipitation ranges from 0.02 to 0.47 inches per month for a total annual precipitation of just under 4 inches. Table 3.20-1 and Table 3.20-2 display the average monthly and annual minimum and maximum temperatures and precipitation (rainfall) from 1948 to 2011, as collected from the Blythe Airport, located approximately 5 miles southeast of the MSEP site.

Average annual precipitation in the MSEP area, based on the gauging station at Blythe Airport, is 3.55 inches, with August recording the highest monthly average of 0.61 inches and June recording the lowest monthly average of 0.02 inches. Evapotranspiration rates in the vicinity of the MSEP are high, characteristic of the surrounding desert environment and dry, hot climate. Table 3.20-3 presents average monthly evapotranspiration rates for various stations located in the region.

TABLE 3.20-1
CLIMATE TEMPERATURE DATA RECORDED AT BLYTHE AIRPORT, CALIFORNIA

	Temperatures °F					Mean Number of Days			
	Monthly Averages			Record Extremes		Max. Temp.		Min. Temp.	
Month	Daily Max.	Daily Min.	Monthly	Record High	Record Low	90°F & Above	32°F & Below	32°F & Below	0°F & Below
Jan	66.8	41.6	54.2	89	20	0	0	2.6	0
Feb	71.9	45.4	58.6	93	22	0.2	0	0.8	0
Mar	78.	50.2	64.4	100	30	3.0	0	0.1	0
Apr	86.4	56.5	71.4	107	38	11.5	0	0	0
May	95.2	64.4	79.8	114	43	23.7	0	0	0
Jun	104.5	72.7	88.6	123	46	29	0	0	0
Jul	108.4	81.1	94.8	123	62	30.9	0	0	0
Aug	106.7	80.2	93.5	120	62	30.7	0	0	0
Sep	101.4	73.1	87.3	121	53	28.5	0	0	0
Oct	89.8	60.8	75.3	111	27	17.5	0	0	0
Nov	75.9	48.6	62.3	95	26	0.8	0	0.1	0
Dec	66.6	41.3	54.0	87	24	0	0	1.8	0
Year	87.7	59.7	73.7	123	20	175.7	0	5.4	0

SOURCE: WRCC, 2011a.

TABLE 3.20-2
PRECIPITATION DATA RECORDED AT BLYTHE AIRPORT, CALIFORNIA

Month	Rainfall (inches) [1913-2008]			
	Mean	Highest	Lowest	Highest Daily
Jan	0.48	2.48	0	1.64
Feb	0.45	3.03	0	1.66
Mar	0.35	2.15	0	1.52
Apr	0.15	3.00	0	2.67
May	0.02	0.22	0	0.22
Jun	0.02	0.91	0	0.91
Jul	0.26	2.44	0	1.4
Aug	0.61	5.92	0	3.0
Sep	0.35	2.14	0	1.9
Oct	0.26	1.89	0	1.61
Nov	0.19	1.84	0	1.04
Dec	0.41	3.33	0	1.42
Year	3.55	9.16	0.59	3.0

NOTES: (a) Totals may not match the data in specific columns due to rounding errors.

SOURCE: WRCC, 2011b

TABLE 3.20-3
MONTHLY AVERAGE EVAPOTRANSPIRATION RATES FOR THE MSEP VICINITY

Month	CIMIS Station #135	CIMIS Station #151	CIMIS Station #162	CIMIS Station #175	Regional
	Station: Blythe NE	Station: Ripley	Station: Indio	Station: Palo Verde II	
Jan (in/mo)	2.32	2.44	2.44	2.41	2.48
Feb (in/mo)	3.09	3.31	3.31	3.22	3.36
Mar (in/mo)	5.00	5.25	5.25	5.59	5.27
Apr (in/mo)	6.61	6.85	6.85	7.22	6.90
May (in/mo)	8.54	8.67	8.67	8.78	8.68
Jun (in/mo)	9.69	9.57	9.57	9.42	9.60
Jul (in/mo)	10.13	9.64	9.64	9.58	9.61
Aug (in/mo)	8.91	8.67	8.67	8.61	8.68
Sep (in/mo)	6.85	6.85	6.85	6.58	6.90
Oct (in/mo)	4.64	5.00	5.00	4.74	4.96
Nov (in/mo)	2.95	2.95	2.95	2.94	3.00
Dec (in/mo)	2.07	2.20	2.20	2.25	2.17
Year (in/yr)	70.8	71.4	71.4	71.35	71.6

NOTES: CIMIS monitoring station closest to the site are listed.
Regional evapotranspiration values correspond to CIMS Reference ETo Zone 18, which includes Imperial Valley, Death Valley, and Palo Verde.

SOURCE: CIMIS, 2012.

3.20.1.2 Groundwater

Groundwater in the area of the MSEP is contained within the Colorado River Hydrologic Region, which covers about 19,962 square miles of southeastern California, and overlaps portions of San Bernardino, Riverside, San Diego, and Imperial counties (DWR, 2003). The Colorado River Hydrologic Region is bound to the west by the San Bernardino, San Jacinto and Launa Mountain ranges; to the north by the New York, Providence, Granite, Old Dad, Bristol, Rodman, and Ord mountain ranges and the State of Nevada; to the east by the Colorado River and the State of Arizona; and to the south by the border of the United States and Mexico. The Colorado River Hydrologic Region also includes the Salton Sea and the Coachella and Imperial valleys, and has an average annual precipitation of 5.7 inches.

The Colorado River Hydrologic Region is subdivided into 28 groundwater basins. The MSEP overlies the PVMGB, which lies directly west of the Palo Verde Valley Groundwater Basin (PVVGB). The PVVGB underlies the Colorado River and surrounding areas, and functions as the river's historic flood plain. The PVVGB is tributary to the lower Colorado River, and is part of the Colorado River aquifer. The PVMGB contains somewhat higher ground surface levels that are outside of the Colorado River's historic flood plain. The location of the boundary between the PVMGB and the PVVGB does not include a barrier to groundwater flow. The two basins are collectively referred to as the Palo Verde Groundwater Basin (PVGB).

There are no significant subsurface structural features that restrict horizontal groundwater flow within the PVMGB according to the DWR (1979, 2003). The PVMGB is not listed on the DWR list of adjudicated groundwater basins (DWR, 2012).

In the PVMGB, groundwater provides a source of water for domestic, industrial, and agricultural water supply. Surface water from the Colorado River, through the Palo Verde Irrigation District (PVID), is the primary source of water for agriculture in the area. In 2010 the PVID supplied about 270,000 AF of water for agricultural use (United States Bureau of Reclamation, 2011), wherein PVID's service area includes a portion of the PVMGB.

Natural groundwater recharge to the PVMGB includes recharge from precipitation and subsurface inflow from the Chuckwalla Valley Groundwater Basin (CVGB) to the west (DWR, 2004), as well as water derived from the flood plain to the east of the mesa (see also "Subsurface Inflow" section, below). The estimated inflow and outflow rates are shown in Table 3.20-4 and discussed in the subsections below.

Subsurface Inflow

Subsurface inflow into the PVMGB from the CVGB is estimated to be 1,000 AFY, and subsurface inflow into the PVGB from the Parker Valley Groundwater Basin is estimated to be 3,500 AFY (AECOM, 2011a).

Geochemical and water level data supplied by AECOM (2009) previously suggested that groundwater from the Colorado River could potentially flow through the PVVGB to the PVMGB. However, available data do not substantiate or support this hypothesis, and the suggestion of any

TABLE 3.20-4
ESTIMATED ANNUAL GROUNDWATER BUDGET, PVGB

Budget Components	Budget (AFY)
Recharge (Inflow)	
Underflow from Chuckwalla Valley Groundwater Basin	1,000
Underflow from Parker Valley Groundwater Basin	3,500
Agricultural Return – Mesa	3,500
Agricultural Return – Valley	67,000
Percolation from Blythe Wastewater Reclamation Facility	750
Percolation from Mountain Front Precipitation	5,000
PVVGB Irrigation Canal Leakage (less evaporation)	120,000
River Discharge to PVVGB Groundwater (Losing Condition)	225,850
Bedrock	0
Total Inflow	**426,600**
Discharge (Outflow)	
Underflow out of the Palo Verde and Cibola Valley Aquifer	0
Groundwater Pumping for Agriculture – Mesa	3,600
Groundwater Pumping for Municipal and Domestic Use	7,500
PVVGB Groundwater Discharge to Colorado River (Gaining)	50,000
Consumptive Use – Native Vegetation	8,500
PVVGB Groundwater Discharge through PVID Drains	357,000
Total Outflow	**426,600**
Budget Balance (Inflow-Outflow)	**0**

SOURCE: AECOM, 2011a, Table 1

groundwater flow from the Colorado River through the PVVGB into the northern PVMGB under the present irrigation management regime is disputed by the PVID, whose drains prevent any such underflow from occurring.

Irrigation Return Flow

As indicated in Table 3.20-4, approximately 3,600 AFY of groundwater is drawn from the mesa for irrigation use on 724 acres of agricultural land. In addition, the PVID supplies surface water from its irrigation canal system in the Palo Verde Valley (the water is pumped uphill) to 1,862 acres in the Palo Verde Mesa area. The groundwater assessment prepared for the Project used estimates of 4.5 to 5.85 AF/ac/year and a crop efficiency of 70 to 75 percent on these combined 2,683 acres on the mesa. Assuming that 25 to 30 percent of the water applied to crops infiltrates and recharges the groundwater basin, an estimated 3,500 AFY recharges the area from irrigation return flow. (AECOM, 2011a, Table 1).

Recharge from Precipitation

In this area of the Colorado Desert, almost all moisture from rain is lost through evaporation or evapotranspiration and runoff occurs principally during intense thunderstorms (Colorado River RWQCB, 2006). Most recharge from precipitation occurs when runoff from the surrounding mountains exits bedrock canyons and flows across the coarse sediments deposited along the western edge of the PVMGB.

Methods to estimate runoff proposed by Hely and Peck (1964) were used by AECOM (2010a) to estimate mean annual runoff in the PVMGB. Hely and Peck estimated runoff based on precipitation data, the rainfall-runoff relationship, and observed characteristics of the terrain. AECOM (2010a) reviewed topographic and geological data to divide the PVMGB into localities that approximated those described by Hely and Peck (i.e., mountains, hills, alluvium-steep slope, or alluvium-shallow slope). AECOM calculated the area for each locality. Information from Hely and Peck was used to select an average runoff curve number for each locality assuming an average of all soil types. For example, an average runoff number of 74 was selected for alluvium-steep slope. Hely and Peck developed a relationship between the runoff curve number and the runoff as a percentage of the precipitation. The annual volume of runoff from each locality was calculated by multiplying the area times the mean annual precipitation times the percentage of runoff estimated for the runoff curve number.

From the estimated total runoff for the PVMGB, 5 percent of the estimated total volume of rainwater from mean annual precipitation was calculated to generate an estimate of total annual infiltration volume (AF) for the basins. Table 3.20-5 presents the estimate of total annual infiltration for the PVMGB.

Return Flow from Wastewater Treatment and Irrigation Canal Leakage

AECOM (2011a) estimates that 750 AFY is returned to the PVGB through percolation from the percolation-evaporation ponds at the Blythe Regional Water Reclamation Facility. Additionally, 120,000 AFY is returned to the PVGB from leakage from irrigation canals. Based on the location of this infrastructure, these return flows occur primarily in the PVVGB.

Subsurface Outflow

As previously stated, the PVMGB is in direct connection with the PVVGB. It is possible that at the southern end of the PVMGB, outflow could occur to the adjacent PVVGB. However, at the northern end of the PVMGB, in the vicinity of the MSEP, subsurface outflow from the PVMGB is not expected to occur. Any outflow occurring along the southern end is expected to be minor in comparison to subsurface inflow at the northern end. Therefore, subsurface outflow from the PVMGB is considered insignificant.

Agricultural Groundwater Demand

Approximately 364 acres within the PVID service area and an estimated 360 acres outside its service area are irrigated with pumped groundwater on the mesa (AECOM, 2011a, Table 1). As

TABLE 3.20-5
ESTIMATES OF RUNOFF AND INFILTRATION IN PALO VERDE MESA GROUNDWATER BASIN

Layer[a]	Area (acres)	Mean Annual Precipitation (inches)[b]	Total Volume of Rainwater from Mean Annual Precipitation (AF)	Runoff Curve Classification[b]	Runoff Curve Number[b]	Runoff (percent of Precipitation)	Total Annual Volume of Infiltration – Hely & Peck (AF)	Total Annual Volume of Infiltration (AF) based on 5 percent[c]
unit1-pvm	23,695	4	7,898	Alluvium, Steep Slope	74	3.50%	276	395
bedrockpvm	5,624	4	1,875	Mountains	93	29.10%	546	94
bedrockpvm	16,819	6	8,409	Mountains	93	29.10%	2,447	420
bedrockpvm	13,571	4	4,524	Mountains	93	29.10%	1,316	226
bedrockpvm	18,298	4	6,099	Hills	83	10%	610	305
unit1-pvm	79,574	5	33,156	Alluvium, Steep Slope	74	3.50%	1,160	1,658
unit2-pvm	382	4	127	Hills	83	10%	13	6
unit2-pvm	122,370	4	40,790	Alluvium, Flat Slope	69	2%	816	2,040
Totals	***280,332***	***---***	***102,878***	***---***	***---***	***---***	***7,184***	***5,144***

NOTES:
[a] See Figure DR-S&W-179 in AECOM 2010b.
[b] From Hely & Peck, 1964.
[c] Based on a percent of Total Volume of Rainwater from Mean Annual Precipitation (Column 4).

SOURCE: CEC, 2010.

shown in Table 3.20-4, the groundwater assessment prepared for the Project estimated the total agricultural groundwater irrigation demand on the mesa at approximately 3,600 AFY (AECOM, 2011a).

Municipal and Domestic Use and Consumptive Use by Native Vegetation

AECOM (2011a) estimates that wells operated by the City of Blythe and Riverside County pump approximately 7,500 AFY from the PVGB for municipal and domestic uses (e.g., a city-run golf course), and that consumptive use by riparian vegetation (from evapotranspiration) totals 8,500 AFY.

Groundwater Budget

AECOM (2011a) indicated relatively stable groundwater levels over time, suggesting very little change of groundwater in storage. In addition, they suggested that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB.

Water Bearing Units

The following water-bearing formations have been identified in the PVMGB.

Quaternary Alluvium

The youngest major units in the Palo Verde region, the Older Alluvium and Younger Alluvium, were deposited by the Colorado River and are the primary water-bearing units of the local aquifer system (referred to as the groundwater system in this report). The Older and Younger Alluvium were deposited as a series of floodplain deposits. The Older Alluvium is composed of ancestral floodplain deposits and results from all but the most recent cycle of erosion and deposition by the Colorado River. The Older Alluvium comprises all of the known groundwater system deposits of the Palo Verde Mesa and extends beneath the Palo Verde Valley, underlying the Younger Alluvium. The Older Alluvium is much thicker than the Younger Alluvium, reaching thickness of 600 feet beneath the central portion of the valley and the mesa and pinching out along the bordering bedrock mountains. The Older Alluvium is composed of sand, silt, and clay with minor amounts of gravel. The USGS also described the composition and productivity of the Older Alluvium in the mesa. The Older Alluvium includes a narrow zone of highly productive gravel lenses, which occur within a mile of the boundary between the PVVGB and the PVMGB.

The most recent erosional episode carved the lowest terrace of the present-day Palo Verde Mesa, as well as a trench in the central portion of these older floodplain deposits. The Younger Alluvium fills this trench with about 100 feet of sediments and comprises the present-day floodplain deposits of the Colorado River within the Palo Verde Valley. The Younger Alluvium is predominately sand and gravel with minor amounts of silt and clay.

Pliocene Bouse Formation

The Pliocene Bouse Formation underlies the Quaternary sediments. The Bouse Formation includes a marine to brackish-water estuarine sequence deposited in an arm of the proto-Gulf of

California (Wilson and Owen-Joyce, 1994; Metzger, 1968). This formation has alternatively been interpreted as, or may include, lacustrine sediments deposited in a closed, brackish basin (Stone, 2006). The Bouse Formation is widely reported in the Colorado River valley and tributary basins in southeastern California and descriptions of this formation come from occurrences outside of Chuckwalla Valley. It is reported to be composed of a basal limestone (marl) overlain by interbedded clay, silt, sand, and tufa. The top of the Bouse Formation is relatively flat lying with a reported dip of approximately 2 degrees, south of Cibola (Metzger et al., 1973). These unconsolidated to semi-consolidated sediments are reported to yield several hundred gpm in wells perforated within coarse-grained units (Wilson and Owen-Joyce, 1994).

Miocene Fanglomerate

The following information is from Metzger et al. (1973). The Bouse Formation is unconformably underlain by a fanglomerate composed chiefly of angular to subrounded and poorly sorted, partially to fully cemented pebbles with a sandy matrix. The fanglomerate is likely of Miocene age; however, it may in part be of Pliocene age. The fanglomerate represents composite alluvial fans built from the mountains towards the valley, and the debris of the fanglomerate likely represents a stage in the wearing down of the mountains following the pronounced structural activity that produced the basin and range topography in the area. Bedding surfaces generally dip from the mountains towards the basin. The fanglomerate reportedly dips between 2 and 17 degrees near the mountains due to structural warping. The amount of tilting indicates a general decrease in structural movements since its deposition. The presence, depth and thickness of the fanglomerate beneath the MSEP site is unknown but has been reported in the Parker-Blythe-Cibola area by Metzger et al. (1973).

Bedrock

Bedrock beneath the site consists of metamorphic and igneous intrusive rocks of pre-Tertiary age that form the basement complex (Metzger et al. 1973). The bedrock topography in the study area has not been determined but appears to lie at depths exceeding 1,000 feet bgs in Parker Valley which is located over 3 miles to the northeast, and thus bedrock is not likely to be a significant source of water (Metzger et al., 1973).

Groundwater Occurrence and Movement

The groundwater below the Project site in the central part of the mesa occurs under apparently semiconfined conditions in the older alluvium at a depth of about 200 feet bgs (AECOM, 2011a). In their estimate of groundwater storage, the DWR (1979) used an assumed average saturated thickness of 300 feet and a specific yield of 10 percent for the PVMGB to derive a usable storage of about 5 million AF, with about half of the usable storage estimated to be in the McCoy Wash part of the basin. In subsequent reports, the DWR (2003) listed the groundwater in storage for the basin as “unknown” although they listed the total storage capacity in the basin as approximately 6,840,000 AF.

As described in Section 3.7, *Geology and Soils Resources*, the Project site is not crossed by any known active faults or designated Earthquake Fault Zones. No known barriers or faults inhibit the flow of groundwater in the PVMGB (DWR, 1978, 2003).

Water level elevation contours for the PVMGB and PVVGB drawn from year 2000 water level data gathered from the USGS database and the water level measured south of the MSEP site in October 2009 show that, north of the MSEP site, the groundwater flows to the southeast towards the Colorado River, following the general axial trend of McCoy Wash (AECOM, 2011a). Based on the 2000 water level data in the USGS and DWR databases (USGS, 2009; as cited in BLM, 2010; DWR, 2009) for wells located approximately 2 to 3 miles east of the MSEP site, the hydraulic gradient is about 0.007 ft/ft. Groundwater from the PVMGB is also influenced by the PVID drain along the toe of the mesa and bedrock extensions associated with the McCoy Mountains to the east.

Aquifer Characteristics

In their development of a two-dimensional superposition model for the Parker-Palo Verde-Cibola area, which includes the PVMGB, Leake et al. (2008) evaluated published aquifer testing data and through statistical analysis derived a range of transmissivity values from a low value of 6,300 ft^2/day to an average value of 26,200 ft^2/day. They selected a storage coefficient of 0.20 to approximate aquifer conditions throughout their model domain, which includes the CVGB and the PVMGB.

Metzger et al. (1973) provided historical data from pumping tests that were conducted in the 1960s on wells in the PVMGB. They reported transmissivity values ranging from 64,000 to 1,900,000 gallons per day per foot (gpd/ft) of aquifer thickness (or 8,756 to 254,600 ft^2/day), specific yields from 100 to 2,180 gallons per minute per foot of drawdown, and hydraulic conductivities ranging from 210 to 12,300 gallons per day per square foot (gpd/ft^2). The data are summarized in Table 3.20-6. Groundwater production, from wells completed in the PVMGB, averages 1,650 gpm (DWR, 1979). The maximum yield reported was 2,750 gpm from well 6S/22E-16A1, which is approximately 4 miles southeast of the MSEP site. The DWR (1979) indicated that large well yields are common for properly designed and developed wells near the edge of the Palo Verde Valley floodplain, which is east of and adjacent to the PVMGB.

Well yields in the rest of the PVMGB, where sand is the dominant lithology, are lower. Yields greater than 1,000 gpm are reported in wells in the McCoy Wash area. The depth of these wells range from 250 to 600 feet and the wells are 12 to 16 inches in diameter (DWR, 1979).

Historic Groundwater Levels and Flow

AECOM (2009) reported that the water level data from 1971 show local variations in water level contours in the area east of the MSEP site, which suggests localized pumping in support of agriculture. Water level data from 2000 show that the water levels had recovered in the area due east of the site and show a southerly flow of groundwater coincident with the flow in the Colorado River. Recovery of groundwater levels may have also been influenced by the application of canal

TABLE 3.20-6
HISTORICAL PUMPING TEST DATA – PALO VERDE MESA

Well ID	Distance from MSEP Site	Well Owner or Name	Date of Pump Test	Yield/ Drawdown (gpm/ft)	Depth Interval Tested (ft, bgs)	Trans-missivity (gpd/ft)	Trans-missivity (ft^2/day)	Indicated Avg Field Hydraulic Conductivity (gpd/ft^2)	Geologic Source Unit
5S/22E-28C2	3 mi. NE	U.S. Citrus Corp.	10/25/1962	1,450/?	270-358 382-600	64,000	8,576	210	Older Alluvium of Colorado R.
6S/22E-11H1	5 mi. E	H.M. Neighbour	6/18/1964	665/9	165-235	700,000	93,800	10,000	Older Alluvium of Colorado R.
6S/22E-15M1	4 mi. E	E. Weeks	6/12/1963	475/21	168-315	500,000	67,000	3,400	Older Alluvium of Colorado R.
6S/22E-32R1	6.5 mi. S-SE	W. Passey	6/11/1963	650/66	120-123 402-408 479-488	420,000	56,280	NL	Older Alluvium of Colorado R.
6S/22E-35R2	7.5 mi. S-SE	Southern Counties Gas Co.	10/23/1962	520/15	302-326	150,000	20,100	6,200	Older Alluvium of Colorado R.
6S/23E-24J1	12.5 mi. E	Clayton Ranch	7/8/1964	2,180/50	NL	1,900,000	254,600	NL	Older Alluvium of Colorado R.
6S/23E-29R1	9.5 mi. E	City of Blythe 8	10/23/1962	360/33	264-276 354-368	320,000	42,880	12,300	Older Alluvium of Colorado R.
6S/23E-32D1	9.5 mi. E	City of Blythe 9	10/23/1962	520/31	122-132 168-286	430,000	57,620	3,400	Younger Alluvium – basal gravel
6S/23E-32P1	9.5 mi. E	City of Blythe 1	10/23/1962	470/12	245-270 290-296	496,000	66,464	10,000	Older Alluvium of Colorado R.
6S/22E-4P1	3.5 mi. E	J.E. Mason	10/23/1962	100/1.6	NL	1,700,000	227,800	NL	Older Alluvium of Colorado R.

NOTES: NL = Not listed.

SOURCE: Metzger et al., 1973.

water to mesa crops by PVID, in order to manage salinity. Groundwater flow in the PVMGB is from the north, southeast through McCoy Wash at a gradient of 0.001 ft/ft, then south-southwest at gradients of between about 0.0003 and 0.0008 ft/ft in a direction coincident with the flow of the Colorado River (AECOM, 2009).

AECOM (2009) reported that hydrographs indicate that the water level in the PVMGB has generally remained stable over the past few decades, except in areas immediately adjacent to some pumping wells. In well Township 4 Range 21 Section 9B1 at the north end of the PVMGB, groundwater elevation remained unchanged from 1971 to 2000. In wells closer to the MSEP site, groundwater elevations have decreased about 5 feet in well Township 5 Range 22 Section 31E1 from 1966 to 2000 and in well Township 6 Range 22 Section 32R1 from 1947 to 2006. The relatively stable groundwater levels that have been measured over this period suggest that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB. This is probably in large part due to recharge of water from the Colorado River (AECOM, 2009).

Groundwater Quality

In general, water quality in the PVMGB is generally higher near the edge of the Palo Verde Mesa adjacent to the Colorado River floodplain. The amount of dissolved solids becomes progressively higher away from the Colorado River floodplain and with depth (AECOM, 2011c), although the application of surface water in select portions of the PVMGB could result in localized net reductions in dissolved solids concentrations. The groundwater in the area beneath the MSEP site and its vicinity is generally sodium sulfate-chloride in character (DWR, 2003). According to AECOM (2011c), the Total Dissolved Solids (TDS) content of shallow groundwater in the basin ranges from 730 to 3,100 milligrams per liter (mg/L), while the TDS of deeper groundwater is higher at 4,500 mg/L.

Table 3.20-7 presents the analytical results for a select number of wells that were sampled between October 1962 and April 1966 located near the MSEP site. Given the long screen interval for these wells, and the uncertain methodology of sampling the wells, these data likely represent an average water quality of the more permeable sediments over the screen interval. A review of the water quality data for the PVMGB and PVVGB in Table 3.20-7 indicate the following:

1. TDS concentrations (466 to 5,640 mg/L) generally exceeded the recommended standard of 500 mg/L for a drinking water resource in California. TDS concentrations above 1,000 mg/L were reported in water samples from wells located east of the MSEP site.

2. Fluoride concentrations (0.2 to 6.3 mg/L) in some cases exceed the State of California Maximum Contaminant Levels (MCLs) for drinking water (2.0 mg/L). Fluoride concentrations above the MCL are present in water samples from wells on the Mesa located east of the MSEP site. Concentrations are significantly lower and below the MCL in water samples from wells located in the floodplain.

3. Chloride concentrations range from 77.7 to 3,220 mg/L, and in some cases exceed the State of California Secondary MCL for drinking water (250 mg/L). Higher concentrations are found in wells on the Mesa in the area of McCoy Wash.

TABLE 3.20-7
SUMMARY OF GROUNDWATER QUALITY DATA[a,b]
(all values reported in mg/L[c] unless otherwise indicated)

Analyte	Test Well (October 2009)[a]	Well 5/22-28C1 (Oct-1962)	Well 5/22-33J1 (Oct-1962)	Well 6/21-36R1 (May 1964)	Well 6/22-17L1 (April 1966)	All Palo Verde Mesa Groundwater Basin Wells[a]
Arsenic	ND<0.01	--[d]	--	--	--	0.0011
Bicarbonates as HCO3	--	--	--	--	--	20 – 736
Boron	1.41	--	--	1.07	1.4	0.04 – 2.0
Calcium	287	--	--	--	--	9.21 – 844
Carbonates as CO3	--	--	--	--	--	0 – 12
Fluoride	1.3	--	1.7	3	--	0.02 – 6.30
Chloride	370	440	400	420	380	77.7 – 3,220
Iron	0.123	--	--	--	--	0 – 0.4
Magnesium	29.6	--	--	--	--	0.1 – 351
Manganese	ND<0.005	--	--	--	--	0 – 3.9
Nitrate	(N)	ND<0.01	--	--	--	--
Selenium	ND<0.015	--	--	--	--	--
Sodium	457	--	--	--	--	0 – 2,000
Sulfate	970	970	380	440	400	90 – 1,850
Total Alkalinity as CaCO3	34	--	--	--	--	28 – 3,600
TDS	2,170	2,160	--	1,470	1,250	466 – 5,640
pH (units)	--	--	--	--	--	7 – 8.6

NOTES:
a Metals data reported from the unfiltered (“total”) sample (turbidity at the time of sampling <10NTU).
b Water quality data for all wells in the Project vicinity are from available information in online databases and historic reports, a summary of which is provided in Appendix J of the AFC. Source: USGS, 2009; as cited in BLM, 2010.
c mg/L – milligrams per liter
d no data reported in available online databases or historic documents

SOURCE: AECOM, 2010a.

4. Boron concentrations range from 40 micrograms per liter [µg/L] to 2,000 µg/L. Based on data collected in 2009, most of the water samples collected underlying that site exceeded the State of California Action Level for drinking water (1,000 µg/L).

5. Sulfate concentrations range from 90 to 1,850 mg/L, and in some cases exceed the State of California Secondary MCLs for drinking water (250 mg/L). The highest concentrations mirror those found for chloride and are located in the area east of the site and in the area of McCoy Wash.

In general, based on available water quality data from the immediate vicinity of the MSEP site, groundwater below the MSEP site would not meet drinking water quality primary or secondary standards for domestic supply without treatment given the elevated levels of TDS and high concentrations of fluoride, chloride, boron, and sulfate. The data show that generally, TDS and sulfate concentrations were higher with increasing distance from the Colorado River, with the highest concentrations occurring in the area of McCoy Wash and the gap between the PVMGB and CVGB. Fluoride, chloride, and boron concentrations were generally lower in the eastern portions of the PVMGB (closer to the Colorado River) and increased westward towards the MSEP site. The much higher TDS concentrations below the Palo Verde Mesa reflect recharge of high TDS water to the PVMGB from percolation along the mountain front and underflow from Rice and Chuckwalla valleys.

Groundwater Wells in Proximity to the MSEP Site

Over 580 water supply wells were identified in online databases in the PVMGB (see AECOM, 2011a, included as Appendix G of this PA/EIS). A field survey of wells in the Project vicinity conducted by AECOM (2009) encountered no active water supply wells. Nine out of 13 wells within 1 mile of the site were found to be accessible. All of these wells had been used for irrigation supply, but because no sources of electrical power for pumps (i.e., power lines and generators) were observed at any of these wells, it was presumed that these nine wells were inactive. The remaining four wells were reported to be not accessible, and therefore their status could not be determined (AECOM, 2009). Available information for water supply wells located near the MSEP site is summarized in Table 3.20-8. Water level data were updated by AECOM (2011a; Appendix G) to include 2010 data. Only two wells indicated new data available during this period.

TABLE 3.20-8
CHARACTERISTICS OF NEARBY WELLS

State Well Number	Surface Elevation (ft amsl)	Total Depth (ft bgs)	Distance from Proposed Production Well (feet)	Specific Capacity (gpm/ft)
6/21E-25L01	400.2	--	25,000	--
6/22E-08J01	408	302	135,000	35.56-64.80
6/22E-17B01	399.64	302	135,000	25.00-30.60
6/22E-17L01	400	445	15,000	37.88-54.90
6/22E-17L02	397	323	15,500	42.73-56.90
6/22E-18A01	406.88	298	13,000	30.19-35.14
6/22E-18J01	408	302	14,000	32.43-34.62
6/22E-19N02	397	300	20,000	--
6/22E-19N03	397.2	394	20,000	--
6/22E-19R01	395.6	300	21,000	--

SOURCE: Derived from AECOM, 2009; 2010a; 2011a.

3.20.1.3 Surface Water Hydrology, Drainage, and Flooding

There are no permanent bodies of water located on the MSEP site. Surface water in Palo Verde Mesa drains to the southeast into the Palo Verde Valley floodplain, where it floods fields, canals, and PVID drains. In the vicinity of the MSEP, the general surface water flow pattern trends from higher elevations in the McCoy Mountains into shallow moderately defined channels at the base of the mountains. The major watercourse near the MSEP site is McCoy Wash (east of the site) which drains approximately 210 square miles of the Palo Verde Mesa, McCoy Mountains, Little Maria Mountains, and Big Maria Mountains, and exits the mesa to the southeast of the MSEP site. Measured flows in McCoy Wash have reached as high as 4,000 cubic feet per second (cfs), as measured in 1976 during flooding in the watershed (CH2MHill, 2008 as cited in CEC, 2010).

Dry Washes on Site

There are no perennial streams on the MSEP site or the Palo Verde Mesa that impact the MSEP site. The vast majority of the time, the area is dry and devoid of any surface flow. Water runoff occurs only in response to infrequent intense rain storms. Stormwater runoff from higher elevations in the McCoy Mountains flows into moderately defined channels located near the base of these mountains. From that point, stormwater flows across alluvial fan systems that radiate from the base of the McCoy Mountains and mesa. These alluvial fans compose a broad, flat expanse of desert terrain that slopes in a generally southeasterly direction across the MSEP site.

Field observations on site indicate that numerous moderately defined washes traverse the site. These features are discernable on aerial photography. To the west side of the MSEP site they are deeper, containing poorly sorted sediment and angular cobbles and boulders. To the east, they are typically shallow, and tend to be defined by well sorted sand and vegetation. Well developed desert pavement exists between the washes. The conveyance capacity of the washes is limited, and runoff during moderate to large events would break out of these features and be conveyed across the alluvial fan as shallow sheet flow. In general, the drainages appear to be stable and not experiencing significant downcutting or lateral migration. When sufficient flow is present, west-to-east trending washes located on site eventually merge with McCoy Wash, which is located north and east of all proposed MSEP facilities, as described above.

Stormwater Flows

Off-site storm water flows impacting the MSEP site are from five tributary sub-basins that originate in the McCoy Mountains, approximately 3 miles west of the site (AECOM, 2011b). The extent of and approximate sub-basin boundaries of the overall watersheds impacting the MSEP were delineated utilizing a combination of USGS 7.5-minute quadrangle sheets and site-specific aerial topography, including 2-foot LIDAR data specific to the MSEP site. Peak discharges for each sub-basin were calculated using the HEC-HMS model[1] and generally followed the guidelines presented in the *Riverside County Flood Control and Water Conservation District Hydrology Manual.* Stormwater dynamics on site were modeled using the FLO-2D model[2] using output from the HEC-HMS model, as well as available precipitation, LIDAR topography, and ground surface attributes (roughness) as inputs. The FLO-2D model accounts for stormwater input from upstream areas in the McCoy Mountains (based on output from HEC-HMS), as well as stormwater flows generated on site due to precipitation. The overall watershed boundaries,

[1] USACE HEC-HMS software, version 3.5.
[2] FLO-2D Version 2009.06

sub-basin delineations, and HEC-HMS/FLO-2D model domains are shown on Figure 4.20-4. Modeled existing stormwater flow rates are summarized in Table 3.20-9 in cfs.

TABLE 3.20-9
MODELED EXISTING STORMWATER FLOWS FOR 10-YEAR AND 100-YEAR STORM EVENTS AT THE MSEP SITE (CFS)*

Location (see Figure 4.20-4)	10-Year, 24-hour Storm Event	100-Year, 24-hour Storm Event
XS-1	118	718
XS-2	103	594
XS-3	124	782
XS-4	292	1918
XS-5	35	348
XS-6	121	1083

NOTE: Based on the Project's Pre/Post-Development Hydrology Report (AECOM, 2011b), Section 2.4.5, the stormwater flows contained in Table 3.20-9 are based on 10- and 100-year, 24-hour storm events. These precipitation events "were obtained from NOAA's Precipitation Frequency Data Server for the Project vicinity. It is assumed that the 24-hour duration rainfall event is spatially distributed evenly over the hydrologic (HEC-HMS) and hydraulic (FLO-2D) model extents. Precipitation was distributed temporally as a Type II storm, in accordance with the U.S. Soil Conservation Service (now NRCS) Technical Release 55 recommendation for southeastern California. Rainfall depths used for the 10- and 100-year return periods were 2.22 inches and 3.93 inches, respectively" (AECOM, 2011b).

SOURCE: AECOM, 2011b

Flooding

The Federal Emergency Management Agency (FEMA) flood insurance rate maps have not been prepared for the MSEP site or surrounding lands. Therefore, while the MSEP site does not lie within a federally mapped floodplain, flooding could still occur on site.

Springs, Seeps and Playa Lakes

No springs are listed in the area of the PVMGB where the MSEP site is located, according to the National Water Information System (NWIS) database of Water Resources of the United States that is maintained by the USGS. One spring (McCoy Spring) is shown on a geologic map of the area (California Division of Mines and Geology (CDMG), 1967, as cited in CEC, 2010). McCoy Spring is approximately 6 miles northwest of the MSEP site and is located in Pleistocene non-marine sediments just west of the McCoy Mountains. Discharge from McCoy Spring flows west-southwest into Chuckwalla Valley.

Solid bedrock associated with the McCoy Mountains separates the MSEP site from McCoy Spring. Permeability of the bedrock is very low to nil, such that groundwater extraction from the MSEP site is not expected to affect flow from McCoy Spring. In a report on water wells and springs in Palo Verde Valley (DWR, 1978) including the Palo Verde Mesa area, no springs are shown in the McCoy Mountains or the Palo Verde Mesa (AECOM, 2010a).

According to the NWIS database, where seeps and surface discharges/outfalls (along with streams, lakes, wetlands, and diversions) are categorized as "surface water sites," three sites are located on the southern edge of the Palo Verde Mesa approximately 14 miles south of the MSEP site. These sites (site numbers 5, 6, and 7) are listed in Table 3.20-10. The northern segment of the Mule Mountains separates these three sites and associated groundwater gradients/flow directions from the MSEP site. Therefore, groundwater extraction from the MSEP site is not expected to affect these locations.

**TABLE 3.20-10
SURFACE WATER DISCHARGES IN PALO VERDE MESA AND
PALO VERDE VALLEY WITHIN 15 MILES OF MSEP SITE**

Site No.	Location Number	Location Name	Latitude	Longitude	Type	Approx. Distance from MSEP (miles)
1	USGS 334431144121	Rannells Dr at Keim Drive Near Blythe CA	33°34'43	-114°41'26	Stream	8
2	USGS 333755114372301	W Side Drain a 10th and Defrain Ave Blythe CA	33°37'55	-114°37'23	Stream	7
3	USGS 333940114370801	Up W DSie Drain A 6th Ave near Blythe	33°39'40	-114°37'08	Stream	7
4	USGS 332928114443101	Hodges Dr at 30th near Palo Verde CA	33°29'28	-114°44'31	Stream	14
5	USGS 332909114440601	CRDC Near Well 6 CA	33°29'09	-114°44'06	Stream	14
6	USGS 332935114433701	Palo Verde Drain A 30th Ave Palo Verde CA	33°29'35	-114°43'37	Stream	14
7	USGS 333025114421401	Rannells Dr A 28th Ave Nr Ripley	33°30'25	-114°42'14	Stream	13
8	USGS 333123114402300	Westside Dr Palo Verde Outfall, CA	33°31'23	-114°40'23	Stream	12
9	USGS 333241114381901	Central CA Dr a 22nd Ave Nr Ripley CA	33°32'41	-114°38'19	Stream	11
10	USGS 333426114355801	Lovekin Dr A 18th Nr Blythe CA	33°34'26	-114°35'58	Stream	11
11	USGS 333849114354901	W Side Drain A 8th Ave Nr Blythe	33°38'49	-114°35'49	Stream	8
12	USGS 333942114353601	W Side Drain A 6th Ave Nr Blythe	33°39'42	-114°35'36	Stream	8

SOURCE: AECOM, 2010a.

Numerous other "surface water sites" (including seeps and surface discharges) are identified in the NWIS database in the PVVGB east of the PVMGB. As many as 50 "surface water sites" are listed in the NWIS database for the Palo Verde Valley, which includes the floodplain area from the Colorado River westward to the base of the terrace (see AECOM, 2010a). Twelve of the 50 sites are within 15 miles of the MSEP site. The remaining 38 of the 50 sites are 16 or more miles east of the MSEP site. The 12 sites that are closest to the MSEP site are listed in Table 3.20-10. According to the NWIS database, these sites are streams or canals that likely collect irrigation runoff from the abundant farmland in the Palo Verde Valley. Based on information provided by PVID, these sites are expected to collect only limited irrigation runoff water.

3.20.2 Applicable Regulations, Plans, and Standards

3.20.2.1 Federal

Clean Water Act

The CWA established the basic structure for regulating discharges of pollutants into "waters of the United States." The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

1. Sections 303 and 304, which provide for water quality standards, criteria, and guidelines.

2. Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.

3. Section 402 regulates point- and nonpoint-source discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the SWRCB oversees the NPDES program, which is administered by the Regional Water Quality Control Boards (RWQCBs). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Anti-backsliding requirements provided for under CWA §§402(o)(2) and 303(d)(4) prohibit slackening of discharge requirements and regulations under revised NPDES permits. With isolated/limited exceptions, these regulations require effluent limitations in a reissued permit to be at least as stringent as those contained in the previous permit.

4. Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry.

Executive Order 11988 and the Federal Emergency Management Agency

Under Executive Order 11988, FEMA is responsible for management of floodplain areas. FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (i.e., the 100-year flood event).

Safe Drinking Water Act

Under the Safe Drinking Water Act (Public Law 93-523), passed in 1974, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCLs) that are applicable to treated water supplies delivered to the distribution system. MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting MCLs for drinking water. USEPA has delegated to the CDPH the responsibility for administering California's drinking-water program. DHS is accountable to USEPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by USEPA. The applicable state primary and secondary MCLs are set forth in Title 22, Division 4, Chapter 15, Article 4 of the California Code of Regulations.

3.20.2.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for protection of the quality of all waters of the State of California for use and enjoyment by the people of California. It further provides that all activities that may affect the quality of waters of the state shall be regulated to obtain the highest water quality that is reasonable, considering all demands being made and to be made on those waters. The Act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. The statewide program for water quality control is therefore administered most effectively on a local level, with statewide oversight. Within this framework, the Act authorizes the SWRCB and regional boards to oversee responsibility for the coordination and control of water quality within California, including those responsibilities under the federal CWA that have been delegated to the state.

State Water Resources Control Board

Created by the California State Legislature in 1967, the SWRCB holds authority over water resources allocation and water quality protection within the state. The five-member SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine RWQCBs. The mission of SWRCB is to, "preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

Colorado River Regional Water Quality Control Board

The Colorado River RWQCB's Water Quality Control Plan (Basin Plan) establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Basin Plan describes implementation activities and other control measures designed to ensure compliance with statewide plans and policies, and to provide comprehensive water quality planning.

Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with human activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies. Historical beneficial uses of water within the Colorado River Basin Region have largely been associated with irrigated agriculture and mining. Industrial use of water has become increasingly important in the region, particularly in the agricultural areas.

With respect to present beneficial uses, agricultural use is the predominant beneficial use of water in the Colorado River Region, with the major irrigated acreage being located in the Coachella, Imperial, and Palo Verde valleys. The next largest use of water is for municipal and industrial purposes. The third major category of beneficial use, recreational use of surface waters, represents another important segment of the region's economy. The Colorado River Basin Region functions as a portion of the larger Colorado River watershed, which supplies water for agricultural and urban uses, fisheries, hydroelectric power production, recreation, and international treaty obligations.

According to the Basin Plan, all surface and ground waters are considered to be suitable, or potentially suitable, for municipal or domestic water supply with the exception of:

1. Surface and ground waters where the TDS exceed 3,000 mg/L, and the source is not reasonably expected by the RWQCB to supply a public water system, or
2. There is contamination, either by natural process or human activity, that cannot be treated for domestic use using either best management practices or best economically achievable treatment practices, or
3. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

California Fish and Game Code §1602

Section 1602 of the Fish and Game Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFG in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state, and requires any person, state, or local governmental agency, or public utility to notify the CDFG before beginning any activity that will:

1. Substantially divert or obstruct the natural flow of any river, stream or lake;
2. Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
3. Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Preliminary jurisdictional evaluations for waters of the state have been completed in support of the MSEP. These evaluations will be made permanent during final engineering and design of the MSEP. Acquisition of a Streambed Alteration Agreement, if required, would occur prior to construction of the MSEP, thus maintaining compliance with §1602. A Streambed Alteration Agreement is required in the event that the CDFG determines the activity could substantially adversely affect an existing fish and wildlife resource.

22 CCR §§64400.80-64445

These CCR sections require monitoring for potable water wells, defined as non-transient, non-community water systems (serving 25 people or more for more than 6 months). The number of workers employed by the MSEP would exceed this amount during operations. Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the CDPH for review and comment. The wells must also be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated with the year designation based on historical monitoring frequency and laboratory capacity. The MSEP would be required to comply with this regulation.

27 CCR §20200

27 CCR §20200 et seq provides a waste classification system that applies to wastes that cannot be discharged to waters of the state. Applicable facilities include evaporation ponds, as well as various other types of disposal. The evaporation ponds identified for installation in support of the MSEP would be designated as Class II Surface Impoundments Waste management Units (WMU). Therefore, the evaporation ponds must meet the requirements of 27 CCR §20200 et seq, which would require permitted approval from the Colorado River RWQCB and/or the CDPH.

California Water Code §13751

California Water Code §13751 requires a Report of Well Completion to be filed with the DWR within 60 days of well completion. New wells must comply with DWR Well Standards as described in Water Resources Bulletins 74-81 and 74-90.

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3.21 Wildland Fire Ecology

This section was developed in reliance on Section 3.3, *Biological Resources – Vegetation* and the NECO Plan (BLM, 2002). The study area for Wildland Fire Ecology constitutes an area approximately 1 mile larger than the periphery of the Project site boundary, capturing the greatest extent of any likely wildfires near the Project. Fire risk in the study area is moderate with most fires in the NECO Plan area caused by lightning or vehicles.

3.21.1 Environmental Setting

The behavior and characteristics of wildfires are dependent on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and ignition sources (e.g., lightning). The anthropogenic variables are ignitions (e.g., arson, smoking, and power lines) and management (wildfire prevention and suppression efforts).

Vegetation with low moisture content is more susceptible to ignitions and burns more readily than vegetation with higher moisture content. Grasses tend to ignite more easily and burn faster, but tend to burn for a shorter duration than woody vegetation such as shrubs and trees. Continuity of fuels helps sustain wildland fires. Dense vegetation tends to carry a fire farther than patchy vegetation. The presence of invasive annual grasses, however, can provide fuel connectivity in patchy desert shrublands that would otherwise provide inconsistent fuel for a wildland fire. High winds provide oxygen to wildfires and can also blow glowing embers off burning vegetation to areas far ahead of the front of a fire, allowing fires to jump fuelbreaks in some cases. Conditions of low relative humidity will dry out fuels, increasing the likelihood of ignition. Finally, steep slopes and slopes with exposure to wind will carry fires rapidly uphill, and fires that are extinguished in mountainous areas are often contained along ridgelines.

The natural vegetation-fuel types in the study area, Sonoran creosote bush scrub, desert dry wash woodland, and stabilized and partially stabilized desert dunes, are not fire-adapted. Fire, particularly repeated wildfire, is deleterious to these plant communities and tends to deplete the native woody shrubs that characterize and dominate these communities in favor of exotic weedy annuals. See Figure 3.3-1. Compared to other parts of the state, there are relatively few fires in the NECO Plan area and most are small. Between 1980 and 1995, a handful of fires burned a total of about 6,000 acres, all outside the study area.

Sonoran Desert Scrub is the dominant community type within the NECO Planning Area, covering 3.8 million acres, or 69 percent of the total area. The large majority of its distribution (86 percent) is on public lands. Major threats to this community type include fire, grazing, OHV use, and invasions of alien species. Sonoran creosote bush scrub occupies approximately 95 percent of the study area. The remaining 5 percent of the land cover includes stabilized and partially stabilized desert dunes, agricultural, and developed lands, and Ephemeral “Riparian” drainages of Desert

Dry Wash Woodland, Mesquite Bosque (Tetra Tech EC, Inc., 2012), Vegetated and unvegetated Ephemeral channels. None of the lands in the study area appear to have burned in recent history.

BLM and NPS have collaborated in the development of the *Fire Management Activity Plan (FMAP) for the California Desert* (1996) which brings together fire management goals for biological resources, wilderness, and other sources. The FMAP establishes fire management standards and prevention and protection programs as well as limitations on fire suppression methods in critical habitat and other tortoise habitat designed to limit habitat disturbance while keeping fires small (BLM, 2001).

In accordance with the FMAP, wildfire suppression occurs with minimum surface disturbance practical in all habitats. Wildfires are suppressed using a mix of only the following methods in order to minimize habitat disturbance:

1. Aerial attack;
2. Crews using hand tools to create fire breaks;
3. Mobile attack engines limited to public roads, designated open routes, and routes authorized for limited-use;
4. Use of foam and/or fire retardant;
5. Use of earth-moving equipment or tracked vehicles (such as bulldozers) in critical situations to protect life, property, or high-value resource; and/or
6. Post fire-suppression mitigation includes rehabilitation of firebreaks and other ground disturbances and obliteration of vehicle tracts sufficient to discourage future casual use. Hand tools are used for rehabilitation activities whenever feasible.

Exotic and invasive weedy annual plants such as Mediterranean splitgrass and red brome form a complete ground cover in some places, where disturbances such as livestock grazing, OHV use, development and fire have contributed to the spread of exotic annuals by displacing native annual and perennial grasses and forbs (Brooks, 1998; Malo and Suarez, 1995 as cited in BLM, 2002). The Project site is crossed by an unpaved OHV route occupying approximately 5 acres within the study area.[1] The gen-tie line would cross or be within 1 mile of active and fallow agriculture and developed areas. These are the areas most likely to support or carry wildfires in the study area.

Fire Hazard Severity Zones (FHSZs) are areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors that have been mapped by the California Department of Forestry and Fire Protection (CAL FIRE). FHSZs are ranked from moderate to very high and are categorized for fire protection as within a federal responsibility area (FRA) under the jurisdiction of a federal agency, within a state responsibility area (SRA) under the jurisdiction of CAL FIRE, or within a local responsibility area (LRA) under the jurisdiction of a local agency. The Project is located in a FRA under the jurisdiction of BLM with the exception of 477 acres in the southeast

[1] This number is based on an approximate road width of 10 feet and length of 4 miles (2 miles within the Project site and 1 mile to the north and south of the Project site).

corner in an LRA, under the jurisdiction of the RCFD. The BLM would be first responder for wildland fires and the County for structures. The Project is wholly within a moderate FHSZ (CAL FIRE, 2007).

There are no residences or other sensitive receptors located within the Project boundary or in the immediate vicinity of the Project site. The nearest sensitive receptors to the Project site are residences located approximately 2.6 miles southeast and 2.7 miles south of the southern site boundary, respectively (Tetra Tech EC, Inc., 2011). In addition, there are several residences that would be within a mile of the proposed gen-tie line, the closest of which is south of I-10 at a distance of approximately 0.6 mile.

In summary, fire risk in the study area as well as the potential for a major fire in the surrounding area is moderate.

3.21.2 Applicable Regulations, Plans, and Standards

3.21.2.1 Federal

Federal Energy Regulatory Commission

FERC requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, however, the minimum clearances required in state regulations are greater than the federal requirement. In California for example, the state has adopted General Order 95 rather than the NERC Standards as the electric safety standard for the state. Since the state regulations meet or exceed the FERC standards, the FERC requirements are not discussed further in this section, as compliance with the state requirements will ensure that the federal requirements are met.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are founding on the following guiding principles:

1. Firefighter and public safety is the first priority in every fire management activity.
2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
3. Fire management plans, programs, and activities support land and resource management plans and their implementation.
4. Sound risk management is a foundation for all fire management activities.

5. Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
6. Fire management plans and activities are based upon the best available science.
7. Fire management plans and activities incorporate public health and environmental quality considerations.
8. Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
9. Standardization of policies and procedures among federal agencies is an ongoing objective.

International Fire Code

Created by the International Code Council, the International Fire Code addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage. The International Fire Code places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the International Fire Code uses a hazards classification system to determine the appropriate measures to be incorporated in order to protect life and property (often, these measures include construction standards and specialized equipment). The International Fire Code uses a permit system based on hazard classification to ensure that required measures are instituted.

North American Electric Reliability Corporation Standards

The NERC is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC, 2011). In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kV and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region. The plan, which became effective on April 7, 2006, establishes requirements of the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway (NERC, 2006). The clearances identified must be no less than those set forth in the IEEE Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) (IEEE, 2003).

Institute of Electrical and Electronics Engineers Standard 516-2003

The IEEE is a leading authority in setting standards for the electric power industry. Standard 516-2003, *Guide for Maintenance Methods on Energized Power Lines*, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

3.21.2.2 State

California Fire Code

The California Fire Code is contained within Title 24, Chapter 9 of the CCR. Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the CBC use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

Title 14 CCR §§1250-1258, Fire Prevention Standards for Electric Utilities, provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply.

California Health and Safety Code

State fire regulations are established in §13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Also, §13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

California Public Resources Code

The PRC includes fire safety regulations that apply to SRAs during the time of year designated as having hazardous fire conditions. During the fire hazard season, these regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors[2] on equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire-suppression equipment that must be provided on-site for various types of work in fire-prone areas.

PRC §4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

PRC §§4292 and 4293 require that any person who owns, controls, operates, or maintains any electrical transmission or distribution line shall maintain a firebreak clearing around and adjacent to any pole, tower, and conductor that carries electric current as specified in the section.

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[2] A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap commonly is used to retain carbon particles from the exhaust.

California Strategic Fire Plan

The 2010 Strategic Fire Plan for California is the statewide plan for adaptive management of wildfire. The Fire Plan is a cooperative effort between the State Board of Forestry and Fire Protection and the CAL FIRE. The central goals that are critical to reducing and preventing the impacts of fire revolve around both suppression efforts and fire prevention efforts. The key goals of the plan are:

1. Improved availability and use of information on hazard and risk assessment;
2. Land use planning: including general plans, new development, and existing developments;
3. Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans;
4. Establishing fire resistance in assets at risk, such as homes and neighborhoods;
5. Shared vision among multiple fire protection jurisdictions and agencies;
6. Levels of fire suppression and related services; and
7. Post-fire recovery.

The plan puts emphases on pre-fire adaptive management of risk, including measures such as fuelbreaks, defensible space, and other fuel reduction strategies. The Fire Plan does not contain any specific requirements or regulations. Rather, it acts as an assessment of current fire management practices and standards and makes recommendations on how best to improve the practices and standards in place (CAL FIRE, 2010).

Fire Hazard Severity Zones

CAL FIRE mapped FHSZs in Riverside County based on fuel loading, slope, fire weather, and other relevant factors under the direction of PRC §§4201-4204 and Government Code §§51175-89. FHSZs are ranked from moderate to very high and are categorized for fire protection as within a FRA under the jurisdiction of a federal agency, within a SRA under the jurisdiction of CAL FIRE, or within a LRA under the jurisdiction of a local agency.

3.22 Additional NEPA Considerations

This section addresses several additional areas of concern under NEPA that are relevant to the Proposed Action and Project area: transmission line safety and nuisance and unexploded ordnance.

3.22.1 Transmission Line Safety and Nuisance

3.22.1.1 Introduction

This discussion focuses on the following issues, taking into account both the physical presence of the gen-tie and distribution lines and the physical interactions of their electric and magnetic fields:

1. interference with radio-frequency communication;
2. hazardous and nuisance shocks; and
3. EMF exposure.

3.22.1.2 Environmental Setting

The site is in an uninhabited open desert land with no existing homes or other structures. The available land for gen-tie and distribution corridors would traverse some BLM-administered land and some privately-owned and local government-owned lands in a largely uninhabited desert area, which has only a few residences within 1 mile of the solar plant site and gen-tie line and distribution line routes. The closest residence is approximately 0.6 mile from the proposed gen-tie line, south of I-10. The closest residence to the MSEP plant site is approximately 2.6 miles away.

3.22.1.3 Interference with Radio-Frequency Communication

Overhead transmission lines do not, as a general rule, interfere with normal radio or television reception. However, potential transmission line-related radio frequency interference could be produced by the physical interactions of line electric fields. This would be an indirect effect of transmission line operation. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as corona discharge, but is referred to as spark gap electric discharge when it occurs within gaps between the conductor and insulators or metal fittings.

When generated, corona noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication when the signal is amplitude modulated (AM). The resulting radio interference causes the buzzing or crackling noise one might hear from the speaker of an AM broadcast receiver when near a transmission line. The potential for corona-related interference generally becomes a concern for lines of 345 kV and above. Frequency modulated (FM) signals normally are unaffected as are modern digital signals such as those involved in cellular telephone communication or modern airport and other types of radio communication.

Because of the power loss from corona and gap discharges, it is in the interest of each line proponent to employ design, construction and maintenance plans that minimize them. Since the level of the interference in any given case would depend on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The potential for such impacts therefore would be minimized by reducing the line electric fields and locating the line away from inhabited areas. The Federal Communications Commission requires a line's owner to mitigate such interference in specific cases.

3.22.1.4 Hazardous and Nuisance Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and an energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines. No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. However, safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public. See also Section 3.9, *Hazards and Hazardous Materials*.

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from an energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields. The potential for nuisance shocks around transmission lines would be minimized through standard industry grounding practices specified in the National Electrical Safety Code and the joint guidelines of the American National Standards Institute and the IEEE.

3.22.1.5 Electric and Magnetic Field Exposure

EMFs occur whenever electricity flows. They are associated with the production, transmission, and use of electric power including by high-voltage transmission lines, secondary power lines, home wiring and lighting, and the motors and heating coils found in electronic equipment and appliances (National Institute of Environmental Health Sciences, 2010). The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Questions also have been raised about EMF interference with computer monitors.

Data and other information as evaluated by the CPUC, CEC, and other regulatory agencies indicates a lack of scientific evidence that either confirms or denies a causal link between EMFs and a significant health hazard to humans exposed to such fields (see, e.g., OSHA, 2011; Neutra et al., 2002). Most regulatory agencies believe that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

1. Any exposure-related health risk to the exposed individual would likely be small.
2. The most biologically significant types of exposures have not been established.
3. Most health concerns are about the magnetic field.
4. Measures can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

Although there is considerable uncertainty about EMF health effects, it appears that EMFs associated with some transmission lines can affect the operation of older model pacemakers by causing them to revert to asynchronous pacing. Cardiovascular specialists do not consider prolonged asynchronous pacing to be a problem: periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. With dual-chamber pacemakers, inappropriate pacing has been documented before unit reversion to asynchronous mode (EPRI, 1997). Depending on the manufacturer and design, the magnetic field threshold for pacemaker interference, including the possibility of inappropriate pacing, is in the range of to 12 Gauss (G), and the electric field threshold is about 1.5 kilovolts/meter (kV/m) for some of the more sensitive dual-chamber units, and above 2.0 kV/m for older ventricular units (EPRI, 1997).

Magnetic fields can interfere with personal computer monitors that use cathode ray tubes (CRTs). Resulting disturbances affect the image displayed on the monitor, causing it shake or distort. The extent of interference depends on several factors, including the monitor’s orientation, design, and vertical image refresh rate as well as the 60 Hz magnetic field intensity.

3.22.1.6 Regulatory Setting

There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. However, the Western Electricity Coordinating Council (WECC), a regional entity responsible for promoting and coordinating bulk electric system reliability in the western United States, has adopted a policy to separate parallel transmission lines within a common corridor by the greater of 500 feet or the length of the longest span (distance between adjacent transmission structures), which for the proposed Project is anticipated at 800 to 1,000 feet (BLM, 2010).

3.22.2 Unexploded Ordnance

3.22.2.1 Introduction

More than 5 million acres of BLM-managed land that is open to public access may contain UXO. The BLM is collaborating with the Department of Defense (DOD) and the USACE to address UXO-contaminated lands currently under BLM management and the possible transfer of additional military lands to BLM management.

3.22.2.2 Environmental Setting

Because of the area's former use for military training, as described in Section 3.9, *Hazards and Hazardous Materials*, there is potential for discarded military munitions, other explosives, and unexploded ordnance (collectively, UXO) to be encountered. The BLM has conducted investigations at several of the known camps, but has not completed a UXO survey of the entire training ground. As with most current or former military installations, there is a possibility of UXO. Reportedly, several UXO discoveries have been made in the immediate vicinity of the site. Information obtained from cultural resource studies in the area and construction efforts at the BSPP indicate that UXOs have been identified in the area with increasing frequency near the McCoy Wash (Tetra Tech EC, Inc., 2011).

3.22.2.3 Regulatory Setting

The CERCLA requires that, before transferring lands from the military, the military service must search for and remove munitions and UXO to accommodate reasonably anticipated future land uses.

CHAPTER 4
Environmental Consequences

4.1 Introduction

This chapter assesses environmental consequences or impacts that would result from the implementation of the Proposed Action or the alternatives described in Chapter 2, *Proposed Action and Alternatives*. The scope of the impact analyses presented in this chapter is commensurate with the level of detail for the alternatives provided in Chapter 2, and the availability and/or quality of data necessary to assess impacts. Baseline conditions for assessing the potential environmental impacts are described in Chapter 3, *Affected Environment*.

The impact assessment that follows focuses on the general impacts that could occur as a result of implementing each of the alternatives. The methodology for this assessment conforms to the guidance found in the following sections of the CEQ regulations for implementing NEPA: 40 CFR §1502.24, *Methodology and Scientific Accuracy*; 40 CFR §1508.7, *Cumulative Impact*; and 40 CFR §1508.8, *Effects*. The CEQ regulations require agencies to "rigorously explore and objectively evaluate" the impacts of the alternatives. This chapter discusses short- and long-term direct, indirect, and cumulative impacts of the Proposed Action and alternatives, identifies mitigation measures to address adverse impacts, and summarizes on an issue-by-issue basis the residual impacts that would remain after mitigation measures are incorporated.

4.1.1 Baseline

The baseline for purposes of this PA/FEIS is the affected environment described in Sections 3.2 through 3.22, which generally reflect conditions as they existed on or about August 29, 2011, when the BLM published a NOI announcing its intention to prepare a Draft PA/EIS. The baseline is intended to reflect the pre-Project environmental conditions to which the potential impacts of the Proposed Action and alternatives are compared in Sections 4.2 through 4.24.

4.1.2 Analytical Assumptions

The impacts analyses contained within this chapter were conducted using the following assumptions:

1. The laws, regulations, and policies applicable to BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.

2. The proposed facility would be constructed, operated, maintained, and decommissioned as described in each action alternative including the implementation of APMs (see Section 2.3.1.4.

3. Short-term impacts are those expected to occur during the construction phase and the first 5 years of the operation and maintenance phase. Long-term impacts are those that would occur after the first 5 years of operation.

4.1.3 Types of Effects

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. The terms “effects” and “impacts” as used in this document are synonymous and could be beneficial or detrimental.

4.1.4 Resources and Uses Not Affected or Present in the Action Area

The resources, BLM program areas, or other aspects of the human environment that were determined by the BLM as not affected or not present in the Project area include: wild and scenic rivers; national scenic or historic trails, monuments, recreation areas, or conservation areas; cooperative management and protection areas; outstanding natural areas; forest reserves; wetlands; livestock grazing; and wild horses and burros.

4.1.5 Cumulative Scenario Approach

Cumulative effects are defined as the impact on the environmental that results from the incremental impact of the Proposed Action and alternatives when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions (40 CFR 1508.7). This PA/FEIS analyzes the cumulative effects of the construction, operation and maintenance, closure, and decommissioning of the Project within the ROW grant application area and all other elements of the Proposed Action, taking into account the effects of other past, present, and reasonably foreseeable future actions. The cumulative effects analysis considers past actions that are related either in time or space (i.e., temporally or in geographic proximity) to the proposed action, present actions that are ongoing at the same time the Draft PA/EIS was being prepared; and reasonably foreseeable future actions, limited to those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

Varying degrees of information exist about projects within the cumulative scenario. Therefore, for resource areas for which quantitative information is available, a quantitative analysis is provided; however, if said level of detail is not available, a qualitative analysis is provided. Because cumulative effects is defined as the incremental impact of a Proposed Action and alternatives, the PA/FEIS does not analyze potential cumulative effects on a resource if the Proposed Action and alternatives would have no direct or indirect effects on that resource. See, for example, Section 4.1.4, *Resources and Uses Not Affected or Present in the Action Area*.

The cumulative scenario includes projects identified in Table 4.1-1. Table 4.1-1 identifies each resource or BLM program, the cumulative analysis impacts area (which is the geographic scope for each cumulative effects issue), issues to consider (as limited by the timeframes within which the Project could cause an effect), and which renewable projects, other known actions or activities

TABLE 4.1-1
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Issues to Consider	BLM Renewable Energy Projects	Other Known Actions/Activities
Air Resources	MDAB	PM2.5, PM10, ozone	All projects	All projects
Biological Resources - Wildlife	Recovery Plan Area defined by NECO; Critical Habitat Unit defined by USFWS/CDFG; existing range or eastern Riverside County	Desert Tortoise, Mojave fringe-toed lizard, Couch's spadefoot toad, migratory birds, golden eagle, western burrowing owl, American badger, kit fox, Nelson's big horn sheep. Also, mortality and injury; special status wildlife; wildlife movement; indirect impacts, including from lighting, collisions, and climate change.	All projects	All California projects
Biological Resources – Vegetation	NECO Plan area	Ephemeral drainages and natural communities; special status plants; stabilized and partially stabilized dunes and sand transport corridors; invasive plants	All projects	All California projects
Cultural Resources	Cultural sites, traditional use areas, and cultural landscapes on the plant site, along the linear facilities corridor and in the general vicinity of the site, including along the I-10 corridor	Ground-disturbing activities and the cultural character of the site and its vicinity. Cultural resources, including archaeological (prehistoric and historic), and ethnographic resources.	All projects	All projects
Geology and Soils	Project site and linear facilities corridor Watershed, PVMGB	Accelerated and/or environmentally harmful soil erosion; and land subsidence.	Blythe Energy Project II, BSPP, Desert Quartzite Solar Farm, Gypsum Solar, enXco McCoy	Palo Verde Mesa Solar Project, Blythe Airport Solar I Project, Blythe PV Project
Greenhouse Gases and Climate Change	International, national, and regional	CO2e	All projects	All projects
Hazards and Hazardous Materials	MDAB, watershed, groundwater basin, with focus on and in the vicinity of the site Project site and linear facilities corridor; jurisdictional boundary of the RCFD plus mutual aid agencies	Releases, spills, emissions, bacteria; ground disturbance that exposes existing subsurface conditions; engineering and administrative controls; health risks Site access; fire response; hazardous materials response; advanced life support/paramedic services; disaster preparedness	All projects	All projects
Lands and Realty	Project site and linear facilities corridor; CDCA Plan areas bearing the multiple use class designation "Limited"	Designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), existing ROWs, I-10; restriction or preclusion of otherwise allowable use opportunities	BSPP, enXco McCoy, Desert Quartzite, Palo Verde 2, and Rio Mesa	Desert Southwest Transmission Line Project; Eagle Mountain Landfill Project
Mineral Resources	All areas potentially underlain by construction-grade aggregate resources	Designated aggregate resource areas, extent and availability of aggregate.	All projects	All projects

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other Known Actions/Activities
Noise	Areas within 0.5 mile of the Project	Equipment, motor vehicles	enXco McCoy, BSPP, and Palo Verde 2	Colorado River Substation Expansion and CUP03602
Paleontological Resources	Quaternary-age geologic units within Eastern Riverside County	Ground-disturbing activities; rock units with potential high sensitivity or known paleontological resources	All projects	All projects with ground disturbance
Recreation and Public Access	NECO Plan area "Class L" lands, LTVAs, Lands with Wilderness Characteristics, OHV Routes, recreational areas within viewing or hearing distance	Dispersed recreational opportunities and experiences, LTVAs, lands with wilderness characteristics OHV, recreation opportunities, unauthorized routes	enXco McCoy, BSPP, Palo Verde 2, Rio Mesa Solar Electric Generating Facility, Desert Quartzite	Desert Southwest Transmission Line Project, Eagle Mountain Landfill Project, Blythe Airport Solar Project, Colorado River Substation Expansion, and CUP03602
Social and Economic Setting	Social: Eastern Riverside County Economic: Riverside County	Flow of goods and services; impacts to local infrastructure and services; ability to meet housing demand; employment/labor demand; possible positive impacts to regional economic sectors and/or adverse community impacts; severance or other tax benefits; ability of communities to absorb impacts.	Palen Solar Energy Project, enXco McCoy, Genesis Solar Energy Project, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight, Desert Harvest Project, Gypsum Solar, Palo Verde 2, Desert Center II, Rio Mesa Solar Electric Generating Facility	Devers-Palo Verde 2 Transmission Line Project, Colorado River Substation Expansion, Desert Southwest Transmission Line, BNR100126, CUP03602, Palo Verde Mesa Solar Project
Special Designations	California Desert, with emphasis on Riverside County	Lands with Wilderness Characteristics	enXco McCoy	None
Transportation and Traffic	Transportation: Eastern Riverside County, focusing on the I-10 corridor	Construction traffic – materials and workers	All projects	All projects listed in Table 4.1-4
Utilities and Service Systems	California Desert, with emphasis on Riverside County	Solid and liquid wastes	All projects	All projects
Visual Resources	I-10 corridor; viewshed and visible area described in Section 3.22.1.3	Project appearance/visual contrast; construction-related dust, light, glint and glare; views from key observation points	BSPP, Desert Quartzite, and Palo Verde 2	Blythe Airport Solar Project, Colorado River Substation Expansion, and CUP03602
Surface water	Watershed	Hydrology and water quality	enXco McCoy, BSPP, Desert Quartzsite, Gypsum Solar, Palo Verde 2, Rio Mesa	Blythe Energy Project Transmission Line, Blythe PV Project, City of Blythe projects, Blythe Airport Solar I Project, DPV2, CRS, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, RCL00161R1, BGR100258, BNR100126, CUP03602, Palo Verde Mesa Solar Project

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other Known Actions/Activities
Groundwater	PVMGB	Basin balance, levels and quality	Blythe Energy Project II, BSPP, Desert Quartzite Solar Farm, Gypsum Solar, and enXco McCoy	Blythe PV Project
Wildland Fire Ecology	Eastern Riverside County	Mortality of plants and wildlife, loss of forage and cover; changes to the vegetation communities; spread of invasive plants; consequences of subsequent extreme weather events	All projects	West-wide Section 368 Energy Corridors, Eagle Mountain Pumping Plant, Recreational Opportunities, Kaiser Mine, Blythe Energy Project Transmission Line, Blythe Airport Solar 1, Chuckwalla Valley Raceway, Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Devers-Palo Verde 1 Transmission Line, Blythe Energy Project II, Devers-Palo Verde 2 Trans-mission Line Project, Colorado River Substation Expansion, Desert Southwest Transmission Line, Eagle Mountain Landfill Project
Transmission line safety and nuisance	Immediate vicinity of the proposed gen-tie line	Interference with radio-frequency communication; noise; fire hazards; hazardous shocks; nuisance shocks; and EMF exposure	All projects	Devers-Palo Verde 1 Transmission Line, Blythe Energy Project Transmission Line, Devers-Palo Verde 2 Transmission Line, and Desert Southwest Transmission Line
Aviation safety	Air space governed by the Blythe ALUCP	Navigable airspace; reflectivity and temporary flash occurrences; radio frequency emissions and potential interference; thermal plumes; height and location of structures; clear space within Compatibility Zone D; bird strike and avian-aviation incompatibilities	BSPP, enXco McCoy, Blythe Energy Project II	Blythe Airport Solar 1, Blythe PV Project, Blythe Energy Project Transmission Line, Devers-Palo Verde 1 Transmission Line, Desert Southwest Transmission Line, Palo Verde Mesa Solar Project

TABLE 4.1-2
RENEWABLE ENERGY PROJECTS IN THE CALIFORNIA DESERT DISTRICT

BLM Field Office	Number of Projects & Acres	Total MW
Solar Energy		
Bakersfield Field Office	1 project 1,503 acres	150 MW
Barstow Field Office	6 projects 26,850 acres	3,522 MW
El Centro Field Office	6 projects 25,083 acres	2,329 MW
Needles Field Office	3 projects 40,825 acres	920 MW
Palm Springs Field Office	10 projects 67,041 acres	4,768 MW
TOTAL – CA Desert District	***26 projects 161,302 acres***	***11,689 MW***
Wind Energy		
Alturas Field Office	2 projects 35,727 acres	n/a
Barstow Field Office	23 projects 180,591 acres	n/a
Eagle Lake Field Office	11 projects 166,078 acres	n/a
El Centro Field Office	15 projects 120,510 acres	n/a
Hollister Field Office	1 project 9,051 acres	n/a
Needles Field Office	6 projects 74,006 acres	n/a
Palm Springs Field Office	4 projects 7,694 acres	n/a
Ridgecrest Field Office	24 projects 203,571 acres	n/a
Surprise Field Office	4 projects 84,697 acres	n/a
Ukiah Field Office	4 projects 24,637 acres	n/a
TOTAL – CA Desert District	***94 projects 906,562 acres***	n/a

SOURCE: BLM, 2011a,b

are located or would occur within the cumulative analysis impacts area. Table 4.1-2 identifies the total acreage and, where available, power rating of renewable energy projects authorized or applied for on BLM Desert District lands. Most of the projects listed below have been, are being, or would be required to undergo their own independent environmental review under NEPA, CEQA, or both, as applicable. Tables 4.1-3 and 4.1-4 identify existing and reasonably foreseeable future projects along the I-10 corridor. These projects are shown in Figure 4.1-1.

TABLE 4.1-3
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	Interstate 10	Linear project running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	I-10 is a major east-west route for trucks delivering goods to and from California. It is a four lane divided highway in the Blythe region.
2	Chuckawalla Valley State Prison	19025 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	1,080	State prison providing long-term housing and services for male felons classified as medium and low-medium custody inmates jointly located on 1,720 acres of state-owned property. Assessor's Parcel Numbers (APNs) 879040006, 008, 012, 027, 028, 029, 030
3	Ironwood State Prison	19005 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	640	ISP jointly occupies with Chuckawalla Valley State Prison 1,720 acres of state-owned property, of which ISP encompasses 640 acres. The prison complex occupies approximately 350 acres with the remaining acreage used for erosion control, drainage ditches, and catch basins. APNs 879040001, 004, 009, 010, 011, 015, 016, 017, 018, 019, 020
4	Devers-Palo Verde 1 Transmission Line	From Palo Verde (Arizona) to Devers Substation	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Arizona to the SCE Devers Substation, near Palm Springs. DPV1 will loop into the CRS (See Table 4.1-4), which will be located 10 miles southwest of Blythe (SCE, 2011).
5	Blythe Energy Project II; CACA 048811	City of Blythe, north of I-10, 7 miles west of the CA/AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by the Western Area Power Administration (WAPA).
6	West-wide Section 368 Energy Corridors	Riverside County, parallel to DPV corridor	BLM, DOE, U.S. Forest Service	Approved by BLM and U.S. Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
7	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing		144 ft. pumping plant that is part of the Metropolitan Water District of Southern California's facilities. APNs 807150007, 807150009, 807150010
8	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County along the I-10 corridor including the Wiley's Well Campground, Coon Hollow Campground, and multiple LTVAs.
9	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	Existing		Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s. APN 701380031

TABLE 4.1-3 (Continued)
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
10	Blythe Energy Project Transmission Line; 99-AFC-8C	From the Blythe Energy Project (Blythe, CA) to Julian Hinds Substation	Blythe Energy, LLC	Existing	N/A	Transmission line modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.
11	Blythe PV Project	Blythe	First Solar	CPUC approved project terms of a 20 year power purchase agreement for sale of 7.5 MW, Began operations in December 2009	200	7.5 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.
12	Chuckwalla Valley Raceway	Desert Center Airport (no longer a community airport)	Developer Matt Johnson	Existing	400	Proposed 500-mile race track located on 400 acres of land that used to belong to Riverside County and was used as the Desert Center Airport. APNs 811-142-016, 811-142-006. Small private airstrip kept as part of project. Construction completed in March 2010.

SOURCE: BLM, 2011g

TABLE 4.1-4
REASONABLY FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Three Commercial Projects	Blythe, CA	Various	Approved	N/A	Three commercial projects have been approved by the Blythe Planning Department including the Agate Road Boat & RV Storage, Riverway Ranch Specific Plan, and Agate Senior Housing Development.
B	Intake Shell	Blythe, CA		Under Construction	N/A	Reconstruction of a Shell facility located at Intake & Hobson Way. Demolition occurred in 2008, reconstruction planned for 2009-2010.
C	Fifteen Residential Developments	Blythe, CA	Various	Approved/ Under Construction	N/A	Twelve residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
D	Devers-Palo Verde 2 Transmission Line Project; CPUC Application No. A.05-04-015; CACA 048771	From the Midpoint Substation to Devers Substation (CA-only portion*)*	SCE	CPUC Petition to Modify Request to construct CA-only portion was approved by CPUC November 2009. DPV2 to Arizona was originally approved by CPUC in June 2007but not pursued by SCE after 2009. BLM ROD approving the project issued July 2011. CA-only portion is scheduled to begin construction December 2011.	N/A	New 500 kV transmission line parallel to the existing Devers-Palo Verde Transmission Line from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs. The ROW for the 500 kV transmission line would be adjacent to the existing DPV ROW and would require an additional 130 feet of ROW on federal and State land and at least 130 feet of ROW on private land and Indian Reservation land.
E	Colorado River Substation Expansion; CPUC Application No. A.05-05-015	10 miles southwest of Blythe	SCE	Approved by CPUC 11/2009. Application for expansion filed with CPUC in 11/2010. Expansion currently under environmental review.	90	The substation was approved by the CPUC (as the "Midpoint Substation") but is proposed to be expanded as a 500/230 kV substation and would be constructed in an area approximately 1,000 feet by 1,900 feet, permanently disturbing approximately 90 acres. The 500 kV switching station would include buses, circuit breakers, and disconnect switches. The switchyard would be equipped with 108-foot-high dead-end structures. Outdoor night lighting would be designed to illuminate the switchrack when manually switched on. The Draft Supplemental EIR was published by the CPUC in February 2011.
F	Desert Southwest Transmission Line; CACA 044491	118 miles primarily parallel to DPV	Imperial Irrigation District	Final EIR/EIS prepared in 2005. Approved by the BLM in 2006.	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.

TABLE 4.1-4 (Continued)
REASONABLY FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
G	Eagle Mountain Pumped Storage Project; FERC 13123-002	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009. EIR published in mid-2010; FERC Draft EIS published in December 2010.	1,524	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The captured off-peak energy would be used to pump water to an upper reservoir. When the water is released to a lower reservoir through an underground electrical generating facility the stored energy would be added into the Southwestern grid during “high demand peak” times, primarily weekdays. Estimated water use is 8,100 AFY for the first 4-year start-up period and replacement water is 1,763 AFY thereafter (Eagle Crest Energy Company, 2009).
H	Palen Solar Energy Project; CACA 048810	North of I-10, 10 miles east of Desert Center	Solar Millennium LLC/Chevron Energy	Approved by CEC in December 2010. Undergoing environmental review by BLM. Proposed to have one unit online in 2012 and one unit online in 2013.	5,200	500 MW solar trough project on 5,200 acres. Facility would consist of two 250 MW plants disturbing approximately 3,870 acres. Project would include interconnection to the SCE Red Bluff Substation. Project would use an estimated 300 AFY of water.
I	enXco McCoy; CACA 049490	10 miles northwest of Blythe	enXco	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office	12,837	300 MW solar photovoltaic project on 12,837 acres. Project would require a 14-mile transmission line to proposed SCE Colorado River Substation south of I-10. Would use 575-600 AFY of water.
J	Genesis Solar Energy Project; CACA 48880	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra (FPL)	Began construction in December 2010, expected to be in operation by July, 2014.	4,640	250 MW solar trough project on 4,640 acres north of the Ford Dry Lake. Project includes six-mile natural gas pipeline and a 5.5-mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation (NextEra, 2011).
K	Chuckwalla Solar I; CACA 048808	1 mile north of Desert Center	Chuckwalla Solar I, LLC	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office September, 2006.	4,082	200 MW solar photovoltaic project on 4,082 acres. Project would be developed in several phases and would tap into an existing SCE 161-kV transmission line crossing the site.
L	Rice Solar Energy Project; CACA 051022	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (SolarReserve, LLC)	Pre- Application Review with the Riverside County Planning Department on 6/27/2011 Final EIS published on June 10, 2011	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile long interconnection with the WAPA Parker-Blythe transmission line.
M	Blythe Airport Solar I Project	Blythe Airport	U.S. Solar	City of Blythe approved the project in November, 2009 Building Permit applied for December, 2010	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.
N	Blythe Solar Power Project; CACA 48811	North of I-10, immediately north of the Blythe Airport	Solar Millennium LLC/Chevron Energy	Approved by CEC and BLM in 2010; Project activity temporarily suspended due to solar technology change.	9,400	1,000 MW solar trough facility on 9,400 acres.

TABLE 4.1-4 (Continued)
REASONABLY FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
O	Desert Quartzite; CACA 049397	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office	7,245	600 MW solar photovoltaic project located on 7,245 acres. Adjacent to DPV transmission line and SCE Colorado Substation. Approximately 27 AF of water would be used during construction and 3.8 AFY during operation.
P	Desert Sunlight; CACA 48649	North of Desert Center	Desert Sunlight Holdings, LLC	Began construction in September 2011, expected to be in operation by 2015 (First Solar, Inc., 2011a).	4,144	250 MW solar photovoltaic project located on 4,144 acres. Project would tie into the SCE Red Bluff Substation. Approximately 27 AF would be used during construction and 3.8 AFY during operation (First Solar, Inc., 2011b).
Q	Red Bluff Substation' CPUC 10-11-012	Adjacent to the south side on I-10, east of Aztec Road, and west of Corn Springs Road, in unincorporated Riverside County	SCE	Began construction in September 2011, expected to be operational by December 2013	75	220/500 kV Substation. Planned to interconnect renewable projects near Desert Center with a DPV transmission line.
R	Desert Harvest Project; CACA 049491	6 miles north of Desert Center	enXco	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office. Application date November, 2007.	1,207	150 MW photovoltaic plant on 1,207 acres of BLM land. Would require a 5- to 8-mile transmission line to planned SCE Red Bluff Substation.
S	Eagle Mountain Landfill Project; CACA-30070 CACA-25594 CACA-31926	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	US Court of Appeals for the Ninth Circuit issued its opinion regarding the EIS for the project in 11/09 and ruled that the land exchange for the project was not properly approved by the administrative agency. Kaiser's Mine and Reclamation is considering all available options.	3,500	The project is proposed to be developed on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain landfill project proposes to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
T	RCL00161R1	North of I95, east of Intake Blvd	N/A	Reclamation Plan applied for September, 2009	N/A	Expansion of gravel pit from 12.95 acres to 38 acres.
U	BGR100258	Ehlers Blvdand W Chanslor Way	N/A	Grading Permit applied for November, 2010	N/A	Grading permit for 9000 square foot church
V	BNR100126	8 miles south of the intersection of HWY 177 and HWY 10.	U.S. Solar	Building Permit applied for December, 2010	400	49.5 MW solar PV plant (PP24754)

TABLE 4.1-4 (Continued)
REASONABLY FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
W	CUP03602	South of Nicholls Warm Springs, approximately 8 miles west of Blythe.	N/A	Conditional Use Permit approved April, 2009	200	21 MW photovoltaic facility on 200 acres (Riverside County ALUC, 2008)
X	Palo Verde Mesa Solar Project	East of Blythe Solar project, South of Gypsum Solar project.	Renewable Resources Group, Inc.	Conditional Use Permit applied for September, 2011	3,250	Up to 486 MW solar PV generating facility. The project would include a solar panel array, two on-site electrical substations, a maintenance building, and ancillary facilities. A 14.7-mile 230 kV transmission line would cross lands under County, City of Blythe, and BLM jurisdiction to connect to the Colorado River Substation (Riverside County Planning Department, 2012).
Y	Gypsum Solar; CACA 051950	Approximately 7 miles north of Blythe, Ca.	Ridgeline Energy LLC	BLM application pending. Application date March, 2010	3000	50-100 MW solar PV or concentrated PV energy facility. The project would include a solar panel array, a maintenance building, an administration building, a raw water storage tank, a demineralized water tank, a potable water tank, and a 230 kV or lower transmission line and substation (Ridgeline Energy, LLC, 2010a).
Z	Palo Verde 2; CACA 051967	Approximately 13 miles west of Blythe, Ca. South of I-10	BrightSource Energy	BLM application pending. Application date May, 2009. Estimated start of construction 2012.	12,300	1,000 MW concentrated solar power project. Up to five interconnected power plants, each capable of generating 200 MW, would be constructed. Each plant would have a solar field with a power tower and a power block. The solar fields would have four circular mirror arrays focusing light on a dedicated power tower, Each power block would contain a substation that would connect to a project substation (BrightSource, 2009).
AA	Eagle Mountain; CACA 51664	Eagle Mountain, north of Desert Center	L.H. Renewables	BLM application pending. Application date December, 2009	2,690	Wind energy testing facility consisting of two meteorological towers. Each tower would be 197 feet high and would passively collect and record data year round. Total disturbance would be 1.13 acres for both towers (BLM, 2011h).
AB	Desert Center II; CACA 052344	4 miles north east of Desert Center	Ridgeline Energy, LLC	BLM application pending. Application date September, 2010	260	20 MW solar PV project occupying 130 acres of a 260 acre ROW area. The facility would utilize a single-axis tracking system. Transmission infrastructure would be built over a 350 foot span to connect with the existing SCE 161 kV Blythe-Eagle Mountain transmission line (Ridgeline Energy, LLC, 2010b).
AC	Rio Mesa Solar Electric Generating Facility; CACA 53138	Approximately 11 miles south west of the City of Blythe	BrightSource Energy	Plan of Development submitted to the BLM Moreno Valley Field Office in July, 2011. Application for Certification submitted to the CEC in October, 2011. If approved, construction would begin in the fourth quarter of 2013.	5,750	750 MW concentrated solar power project composed of three power plants and a common area with shared facilities. Each 250 MW solar concentration power plant would utilize a solar power boiler and solar field based on heliostat mirror technology. A new generation tie line would be constructed to connect to the new SCE Colorado River Substation.

TABLE 4.1-4 (Continued)
REASONABLY FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Additional Projects Outside Cumulative Figure Boundaries						
	Paradise Valley "New Town" Development	Approximately 30 miles west of Desert Center (7 miles east of the city of Coachella)	Glorious Land Company	Notice of Preparation of an EIR published in December of 2005. Still under environmental review.	6,397	Company proposed to develop a planned community as an international resort destination with residential, recreational, commercial, and institutional uses and facilities. The project is planned as a self-contained community with all public and quasi-public services provided. The project is located outside the Coachella Valley Water District (CVWD) boundaries and the applicant has entered into an agreement with the CVWD to manage artificial recharge of the Shaver's Valley groundwater. The proponent has purchased a firm water supply from Rosedale-Rio Bravo Water District in Kern County. In-kind water would be transferred to the MWD which would release water from the Colorado River Aqueduct to a 38 acre percolation pond on the project site. The MWD would deliver approximately 10,000 AFY to the percolation pond and over the long term, no net loss of groundwater in storage is anticipated.
	Mecca Specific Plan	North of Salton Sea, east of community of Mecca, southeast of City of Coachella.	Mecca Group LLC	NOP of an EIR published in June 2008. Still under environmental review.	2,934	The proposed project includes 19,476 units with a mix of low-, medium- and high-density residential development. Non-residential uses include retail/commercial, mixed use, a golf course, and open space with civic uses and agricultural buffers. The Specific Plan incorporates existing residential, commercial, industrial, and civic uses with a blend of proposed low-, medium- and high-density residential and commercial land uses. The proposed General Plan Amendment and Change of Zone would be changed to Specific Plan and Specific Plan zoning.
	Proposed National Monument (former Catellus Lands)	Between Joshua Tree National Park and Mojave National Preserve		In December 2009, Senator Feinstein introduced bill S.2921 that would designate two new national monuments including the Mojave Trails National Monument.	941,000 acres	The proposed Mojave Trails National Monument would protect approximately 941,000 acres of federal land, including approximately 266,000 acres of the former railroad lands along historic Route 66. The BLM would be given the authority to conserve the monument lands and also to maintain existing recreational uses, including hunting, vehicular travel on open roads and trails, camping, horseback riding and rockhounding.
	Solar Energy projects along Arizona border	Approximately 15 miles east of the CA/ AZ border along I-10 corridor	Various	Applications filed in to Arizona BLM field offices, application status listed as pending.	225,000	Thirteen solar trough and solar power tower projects have been proposed along the I-10 corridor approximately 15 miles east of the CA/AZ border. The projects have been proposed on BLM administered-land in the Yuma and Kingman Field Offices.

SOURCE: Van Dyke, 2011; CEC 2010, BLM 2011a, b, c, d; DOE and BLM, 2011.

The specific area of cumulative effect varies by resource. The BLM has identified the California desert as the largest area within which cumulative effects should be assessed for most resources; however, the appropriate geographic area of cumulative consideration is far smaller than the California desert for some resources and, for others, such as climate change and golden eagles, it is much larger. For each resource, the geographic scope of analysis in the PA/FEIS is based on the natural boundaries and physical conditions relevant to the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the Proposed Action and alternatives. Table 4.1-1 identifies the relevant geographic scope for each resource's analysis of cumulative impacts.

In addition, each project in a region would have its own implementation schedule, which may or may not coincide or overlap with the Proposed Action's schedule. This can impact the conclusions related to short-term impacts from activities such as construction of the Project. To be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Project.

4.1.5.1 Known Actions and Activities in the Cumulative Scenario

Existing actions and activities along the I-10 corridor in Eastern Riverside County (including existing BLM-authorized actions) are identified in Table 4.1-3. Reasonably foreseeable future projects along the I-10 corridor in Eastern Riverside County are identified in Table 4.1-4.

4.1.5.2 Renewable Energy Projects Included in the Cumulative Scenario

A large number of renewable projects have been proposed on BLM-managed land, state land, and private land in California. As of November 2011, there were approximately 120 renewable projects proposed in California in various stages of the environmental review process or under construction. Solar, wind, and geothermal development applications have requested use of BLM land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable energy projects. In addition, approximately 50 applications for solar, wind, and geothermal projects are being considered on BLM land in Nevada and Arizona (BLM 2011e, f). Renewable energy projects in BLM's California Desert District are identified in Table 4.1-2.

Large renewable projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet state-required Renewables Portfolio Standards. Not all of the projects listed will complete the environmental review process or be approved, and not all projects will be funded and ultimately constructed.

4.1.6 Mitigation Measures Included in the Analysis

For impacts identified in the following resource sections, measures have been developed to avoid or reduce potential environmental effects that would be implemented during all appropriate phases of the project from initial ground breaking and construction, to operation and maintenance, and through closure and decommissioning. The measures include a combination of the following:

1. Measures that have been proposed by the applicant (APMs);
2. Regulatory requirements of other federal, state, and local agencies;
3. USFWS terms and conditions identified in the BO; and
4. Additional BLM-proposed mitigation measures; ROW grant terms and conditions; and best management practices.

These requirements generically are referred to as “mitigation measures” throughout this PA/FEIS. Because these mitigation measures are derived from a variety of sources, they also are required, and their implementation regulated, by the various agencies. The Applicant would prepare an Environmental and Construction Compliance Monitoring Plan (ECCMP)/Mitigation Monitoring, Reporting, and Compliance Program (MMRCP) ensuring the effective implementation of the mitigation measures identified to address Project impacts. An initial preliminary draft compilation of mitigation measures for the MSEP is provided in Appendix M, Summary of Bureau of Land Management Mitigation and Monitoring.

Many of the other mitigation measures are required by agencies other than the BLM and their implementation would be enforced by those other agencies against the Applicant. For instance, USFWS’s FESA §7 Reasonable and Prudent Measures will be included in the ROD, and the NHPA §106 Memorandum of Agreement (MOA), a draft of which is provided in Appendix L, will include a number of obligations enforceable by signatories SHPO and ACHP, that also will be included in the ROD. The Applicant would be required by the ROD and the ROW grant to comply with the requirements of those other agencies (see, e.g., 43 CFR §2805.12(a) (federal and state laws and regulations), §2805.12(i)(6) (more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). Any non-compliance with implementation of these other federal or state requirements may impact the approval status of the ROD and ROW grant.

4.1.7 Terms and Conditions found in FLPMA and BLM ROW Regulations

Title V of FLMPA addresses the issuance of ROW authorizations on public land. The general terms and conditions applicable to all public land ROWs are described in FLPMA §505, and include measures to minimize damage and otherwise protect the environment, require compliance with air and water quality standards, and compliance with more stringent state standards for public health and safety, environmental protection, siting, construction, operation, and maintenance of ROWs.

The Secretary may prescribe additional terms and conditions as s/he deems necessary to protect federal property, provide for efficient management, and among other things, generally protect the public interest in the public lands subject to or lands adjacent thereto. For this project, additional terms and conditions will be incorporated into the ROW grant that are necessary to protect public safety, including security fencing and on-site personnel. The environmental consequences analysis in this PA/FEIS identifies impacts and mitigation measures to reduce or avoid impacts. The mitigation measures identified by the BLM and incorporated as terms and conditions of the ROW grant provide those actions necessary to prevent unnecessary or undue degradation of the public lands as required by FLPMA §302. The additional mitigation measures that are identified and described in the PA/FEIS and that would be enforced by the other agencies, as noted above, provide additional protection to public land resources.

Finally, all BLM ROW grants are approved subject to regulations contained at 43 CFR §2800. Those regulations specify that the BLM may, at any time, change the terms and conditions of a ROW grant “as a result of changes in legislation, regulations, or as otherwise necessary to protect public health or safety or the environment” (43 CFR §2805.15(e)).

If the ROW grant is authorized, the BLM will monitor conditions and review any ROW grant stipulations and terms and conditions issued for the Project to evaluate if future changes to the grant are necessary or justified under this provision of the regulations to further minimize or reduce impacts resulting from the Project. Changes may be subject to additional NEPA analysis.

If approved, the solar energy ROW authorization would include diligent development terms and conditions, consistent with the requirements of 43 CFR §2805.12(i)(5). Failure of the holder to comply with the diligent development terms and conditions provides the BLM authorized officer (AO) the authority to suspend or terminate the authorization (43 CFR §2807.17).

If approved, the solar energy ROW authorization would include a required “Performance and Reclamation” bond to ensure compliance with the terms and conditions of the ROW authorization, consistent with the requirements of 43 CFR §2805.12(g). The “Performance and Reclamation” bond would consist of three components. The first component would be hazardous materials, the second component would be the decommissioning and removal of improvements and facilities, and the third component would address reclamation, revegetation, restoration, and soil stabilization.

4.2 Air Resources

4.2.1 Methodology for Analysis

This analysis of potential air resources-related impacts of the Proposed Action and alternatives is based on technical information associated with criteria pollutant estimates, public health risk, and cumulative impacts that would be generated during construction, operation and maintenance, and decommissioning of the Project. The majority of the technical information was prepared by AECOM for the Applicant (AECOM, 2012) and peer reviewed by BLM and Riverside County staff and consultants. In addition, to supplement the technical information prepared by AECOM, ESA prepared a fugitive dust emissions estimate for paved road travel during construction (ESA, 2012).

4.2.1.1 Construction Emissions

Construction emissions were estimated using Project-specific information provided by the Applicant's engineering contractor. The data provided includes the overall construction schedule of 46 months assumed to occur from March, 2013, through December, 2016, divided into different phases of construction for each unit. The air quality technical report (AECOM, 2012) and the paved road fugitive dust emissions estimate calculations (ESA, 2012) are the sources of all assumptions used to estimate the construction emissions that would be associated with the Project. For the purposes of the air quality analysis, it is assumed that the Project would be constructed in six broad phases: Phase 1 - Mobilization; Phase 2 - Civil Improvements; Phase 3 - Photovoltaic Panel Construction; Phase 4 - Office/Structure Building Construction; Phase 5 - Transmission Line Construction; and Phase 6 - System Testing and Commissioning. For each of these phases during construction of each unit, the engineering contractor provided the following information:

1. A list of the types of construction equipment and vehicles to be used;
2. The number of pieces of each type of equipment and vehicle;
3. Daily usage rates in terms of hours per day and miles per day for each piece of equipment vehicle, respectively; and
4. The power rating for each type of equipment used.

Off-Road Equipment Exhaust

Criteria pollutant emissions, including CO, VOC, NO_x, SO_x, PM10, and PM2.5, from off-road construction equipment use were estimated using the Urban Emissions (URBEMIS) 2007 Version 9.2.4 computer model, in accordance with the MDAQMD guidelines. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Emissions from equipment used during each of the six construction phases were modeled separately in the construction module of URBEMIS. The construction module can estimate emissions from seven construction stages, including demolition, mass site grading, fine site grading, trenching, building construction, architectural coating, and paving. Exhaust emissions from the equipment were modeled using the module's building construction stage. Fugitive VOC emissions from asphalt paving were modeled using the module's paving stage. For each phase of construction, the model defaults for the type of equipment used, number of pieces of equipment, power rating, and daily usage rate were replaced by Project-specific information provided by the Applicant's engineering contractor for the Project. The default load factors for off-road equipment were modified to reflect the revised load factors proposed by ARB in the *Amendments to the Regulations for In-Use Off-Road Diesel-Fueled Fleets and Off-Road Large Spark Ignition Engine Fleet Requirements* (ARB, 2010). URBEMIS derives the emission factors and load factors for in-use off-road equipment from ARB's OFFROAD2007 model. Recent studies have indicated that the OFFROAD2007 model over-predicts these load factors by about 33 percent. Therefore, the default load factors in URBEMIS were replaced with the revised load factors proposed by ARB in these amendments.

As the duration of each phase and year of activity are different for Unit 1 and Unit 2, emissions for each unit were calculated with the emissions model separately. Details of the calculations and model input and output are provided in Attachment 1-A of the air quality technical report, *Construction Equipment Emission* and a summary of all criteria pollutant emissions estimated to be generated during construction is provided in Attachment 1-D*, Summary of Criteria Pollutant Emissions* (AECOM, 2012).

On-Road Motor Vehicle Exhaust Emissions

The combustion of fuel in motor vehicle engines results in the generation of CO, VOC, NO_x, SO_x, PM10, and PM2.5 emissions. Motor vehicle brake and tire wear results in the generation of PM10 and PM2.5 emissions. Emissions from motor vehicles used during construction were estimated outside of the URBEMIS model. Emissions from motor vehicles were calculated by multiplying the vehicle-miles-traveled (VMT) by each type of vehicle estimated to be used during the construction phase by emission factors that were compiled by running the ARB's EMFAC2007 (version 2.3) Burden Model for the MDAQMD jurisdiction during calendar year 2013. Daily emissions by vehicle class (e.g., light-duty trucks, heavy duty trucks, heavy-heavy duty diesel vehicle, etc.) from the EMFAC2007 model were divided by the estimated daily mileage traveled by the vehicles to calculate the associated emissions. In addition, the PM10 emission factors account for exhaust, brake wear, and tire wear emissions separately.

PM2.5 emission factors were calculated by multiplying the PM10 emission factors by the mass fraction of PM2.5 emissions in PM10 motor vehicle exhaust, brake wear, and tire wear emissions, as provided by SCAQMD's *Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds* (2006). The motor vehicle emission factors from the EMFAC2007 model and the calculated PM2.5 emission factors are listed in Table 1-A of the air quality technical report, and the motor vehicle emission factors for the specific vehicles to be used during construction of the Project are listed in Table 2 of Attachment 1-C, *Construction Vehicle Emissions* (AECOM, 2012).

Monthly emissions were calculated by multiplying the monthly VMT by the EMFAC2007 vehicle emission factors. Emissions from both on-site and off-site vehicles were estimated. Monthly VMT amounts are based on data provided by the Applicant's engineering contractor, and include the number of motor vehicles to be operated each day for each phase of construction, the daily round-trip distance travelled by each vehicle, and an average of 22 working days per month. Project construction emissions were estimated for each month from March 2013 through December 2016, and annual emissions were estimated by summing the estimated monthly totals for a given year. These data are provided in air quality technical report Tables 3 through 8 of Attachment 1-C, *Construction Vehicle Emissions* (AECOM, 2012). On-site vehicles include water trucks, service trucks, concrete trucks, etc. Off-site vehicles include mainly worker commute vehicles and equipment and material delivery trucks, including trucks delivering PV panels. Different types of equipment and material would be delivered to the site from different regions within California, Arizona, and Nevada resulting in different round-trip distances. For the purpose of comparing criteria pollutant emissions to the MDAQMD thresholds, off-site vehicle emissions were estimated only for emissions that would be generated within the MDAB.

Fugitive Dust Emissions

On-Site Construction Activities

Earth-disturbing activities such as excavation, filling, grading, and vehicle travel during construction of the Project would generate fugitive dust emissions, including emissions of PM10 and PM2.5. Maximum daily fugitive particulate matter emissions generated at the Project site during construction were modeled separately using the URBEMIS construction site grading stage module. To estimate fugitive dust emissions, URBEMIS uses the methodology developed for the SCAQMD by Midwest Research Institute. That four-tiered methodology allows for more refined estimates based on the level of detail known for the construction project. The first tier (default level of detail) was selected for this Project. The default worst-case emission factor for fugitive dust provided by URBEMIS for this tier is 38.2 pounds PM10 per day per acre disturbed.

The AECOM emissions estimates for the Project assume implementation of standard dust control measures (e.g., application of water and/or dust suppressants on unpaved roads and on exposed and stockpiled soils, use of enclosures and minimum freeboard on material haul trucks, and limiting vehicle speeds on unpaved roadways) that would achieve a combined control efficiency rating of 68 percent. The combined 68 percent control efficiency rating is based on control efficiency ratings identified by SCAQMD for various individual dust control measures (SCAQMD, 2007).

It should be noted that the SCAQMD control efficiency ratings are unique for various types of construction activities; for example, applying water to disturbed areas would result in a control efficiency of approximately 61 percent related to general soil disturbance activities, limiting on-site vehicle speeds to 15 mph on unpaved roads would result in a control efficiency of 57 percent related to vehicle travel on unpaved roads, and covering trucks with loose loads and maintaining at least 12 inches of freeboard would result in a control efficiency of 91 percent associated with loose material hauling. Given that the fugitive dust emission estimates for the Project have been estimated using a default emission factor that accounts for all on-site activities (as opposed to specific on-site activities), it is not possible to estimate the exact combined control efficiency rating that would be associated with the standard control measures. However, considering the SCAQMD control efficiency rates identified above, it is reasonable to assume that the combined control efficiency of the standard dust control measures would achieve a total control efficiency rating of 68 percent relative to the 38.2 pounds per day per acre disturbed default emission factor.

URBEMIS estimates the annual fugitive dust emissions during a calendar year by multiplying the maximum daily fugitive dust emissions by the number of working days in that year. However, this calculation results in an overestimate of annual fugitive dust emissions as the maximum daily fugitive dust emissions that would be associated with the Project would not occur each day. Therefore, in order to provide a more accurate estimate of annual on-site fugitive dust emissions, the annual on-site fugitive dust emissions were not calculated with the URBEMIS model: they were calculated using the estimated daily acreage to be disturbed during each month instead of the maximum daily acreage to be disturbed during the construction phase. Monthly on-site fugitive dust emissions were calculated by multiplying the pounds per day per acre disturbed emission factor by the daily acreage disturbed for each construction month and the number of working days per month. Annual on-site fugitive dust emissions were estimated as a sum of monthly emissions during the calendar year.

The desert pavement located at the Project site is of the mature variety; therefore, it is not subject to a great deal of wind erosion. Because of the natural deterrent effect on wind erosion caused by desert pavement terrain, the Applicant has proposed to minimize the disruption of desert pavement during construction of the Project. For instance, vehicle and equipment use would be constrained to the active construction areas and roads. If the desert pavement is disturbed (e.g., by vehicles traversing it), the loosened particles could become airborne during windy conditions. Therefore, the Applicant has proposed a measure to avoid disturbance of the desert pavement to maintain the desert pavement and to minimize fugitive dust emissions due to wind erosion during this phase (see Section 4.2.2). Fugitive dust impacts related to loss of desert pavement are assessed qualitatively.

Off-Site Construction Activities

With regard to off-site fugitive dust construction emissions, all off-site vehicle travel would occur on paved roads, so there would be no fugitive dust generated off-site related to vehicle travel on unpaved roads. For paved road vehicle travel dust emissions, the AECOM emission estimates have been supplemented with a fugitive dust calculation for off-site travel on paved roads using USEPA methodology identified in its AP-42 document (USEPA, 2011). Maximum daily and annual trip amounts were derived from data provided in AECOM’s air quality technical report, Tables 3 through 8 of Attachment 1-C, Construction Vehicle Emissions (AECOM, 2012). The total miles that would be travelled on Black Rock Road and the Project access road for each round trip have been estimated to be 20 miles. This amount was multiplied by the AP-42 predictive emission factor Equation 2 with appropriate variables as identified in AP-42 Section 13.2.1, Paved Roads. The AP-42 emission factor includes a minor reduction factor associated with an assumed 20 “wet” days when at least 0.01 inch of precipitation would fall during the year, but no other emission controls are assumed for the paved road travel dust emissions estimates.

Public Health Risk

The primary hazardous air pollutant emission associated with the Project and alternatives would be DPM emissions from construction equipment. Small quantities of other hazardous air pollutants would be associated with gasoline-fueled vehicles also operating on-site during construction. The location of hazardous pollutant emissions from construction equipment operation would vary across the Project site over the construction period, and thus would not be in a fixed location for long periods of time. The MDAQMD CEQA Guidelines state that an industrial project within 1,000 feet of a sensitive receptor must be evaluated quantitatively to determine if it would expose sensitive receptors to substantial pollutant concentrations based on the criteria presented in the guidelines (MDAQMD, 2011). Because there are no sensitive receptors within 1,000 feet of the Project site, and because there are only a few rural residences located between 2 and 3 miles of the Project site (over 10 times the 1,000-foot screening distance), health risks are assessed qualitatively and a full health risk assessment was not warranted for the Project.

4.2.1.2 Operation and Maintenance Emissions

Operation-related criteria pollutant emissions, including fugitive dust, would be generated from on-site equipment and on-site and off-site vehicle use.

On-Site Equipment Emissions

Off-road equipment on the Project site during operation and maintenance would consist of two 35-horsepower diesel-powered emergency (standby) generators. The operation of the generators would result in the generation of VOC, NO_x, CO, SO_x, PM10, and PM2.5 emissions. According to the California Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition (CI) §93115.9, these generators were assumed to be 2008-2012 model year engines and would comply with the interim Tier 4 off-road compression ignition engines exhaust emissions standards per California Code of Regulations Title 13, Division 3, Chapter 9, Article 4, §2423. The emission factors used for calculating emissions were assumed to be equal to these exhaust standards. Emissions from these diesel generators were estimated for a maximum of 1 hour per day and 50 hours per year of regular testing and maintenance operation. As the duration of emergency use cannot be predicted, emissions during possible emergency use were not included.

Motor Vehicle Emissions

Emissions from both on-site and off-site motor vehicles used during operation and maintenance were modeled using the Operation module in URBEMIS. On-site vehicles used during operation and maintenance include vehicles used for panel washing and other maintenance. Off-site vehicles include employee traffic and delivery trucks. The combustion of fuel in off-site and on-site vehicles would generate VOC, NO_x, CO, SO_x, PM10, and PM2.5 emissions. Motor vehicle brake and tire wear and travel on paved roads with entrained road dust also results in PM10 and PM2.5 emissions.

Emissions were modeled for the year 2017, the first year when the Project would become fully operational. As the proposed land use is not one of the default land uses available in URBEMIS, a user-defined land use was created, along with daily trip rate, trip length, and vehicle characteristics based on the information provided by the Applicant’s engineering contractor. Details of the calculations and model input and output are provided in the air quality technical report, Attachment 2-B, *Operation Vehicles* (AECOM, 2012).

Fugitive Dust

The fugitive dust emission estimates for Project operation and maintenance were prepared by AECOM (2012) and include emission estimates for on-site unpaved road travel and off-site paved road travel. As described above in the construction context, the desert pavement located at the Project site is not subject to a great deal of wind erosion. Because of the natural deterrent effect on wind erosion caused by desert pavement terrain, the Applicant has proposed a measure to avoid disturbance of the desert pavement during operation to maintain the desert pavement and to minimize fugitive dust emissions due to wind erosion during this phase (see Section 4.2.2). Fugitive dust impacts related to loss of desert pavement are assessed qualitatively.

Public Health Risk

There would be few sources of hazardous air pollutant emissions other than limited on-site vehicle traffic at the Project site during facility operation and maintenance.

4.2.1.3 Decommissioning Emissions

Decommissioning-related impacts to air resources would be substantially similar to the construction-related impacts described above.

4.2.1.4 Impact Analysis

Independent of NEPA, federal CAA §176 requires federal agencies that are funding, permitting, or approving an activity to ensure the activity conforms to the applicable State Implementation Plan adopted to eliminate or reduce air quality violations (42 USC §7506). However, the study area has no nonattainment or maintenance designations for any federal AAQS. Consequently, formal CAA conformity requirements do not apply to federal agency actions related to the Proposed Action or alternatives. However, for the purposes of this analysis, the CAA conformity *de minimis* levels are used as mass emissions indicators for adverse annual emissions. The CAA conformity thresholds for maintenance areas (i.e., areas that currently meet federal air quality standards, but have violated the standards in prior years), which in the Project area are 100 tons per year per pollutant, are used in this analysis to gauge the potential for the Project and alternatives to result in an exceedance of National AAQS.

TABLE 4.2-1
MDAQMD AIR QUALITY THRESHOLDS

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NO_x)	25	137
Volatile Organic Compounds (VOC)	25	137
Oxides of Sulfur (SO_x)	25	137
Respirable Particulate Matter (PM10)	15	82
Fine Particulate Matter (PM2.5)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead (Pb)	0.6	3

SOURCE: MDAQMD, 2011.

Project-related construction and operation and maintenance mass exhaust and fugitive dust emissions are also compared to MDAQMD daily and annual thresholds to determine whether the Project or one of the action alternatives could result in an exceedance of the California AAQS.

4.2.2 Applicant Proposed Measures

The Applicant has committed to implementing the following APMs to minimize impacts on air resources from the Project. The impact analysis assumes that the APMs would be implemented as part of the Project to reduce potential impacts as discussed below:

AIR-1: To reduce construction-generated air quality impacts:

1. The main access roads through the facility to the unit substation areas shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the unit substation areas.

2. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB-approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. The frequency of watering can be reduced or eliminated during periods of precipitation.

3. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

4. Visible speed limit signs shall be posted at the site entrance(s).

5. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

6. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

7. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

8. All construction vehicles shall enter the construction site through the treated entrance roadways.

9. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

10. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

11. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

12. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

13. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this measure shall remain in place until the soil is stabilized or permanently covered with vegetation.

14. The disruption of desert pavement shall be minimized to the extent feasible.

AIR-2: To reduce operation and maintenance-related air emissions:

1. The main access roads through the facility to the unit substation areas shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, and delivery areas for operations materials (chemicals, replacement parts, etc.) shall be paved or treated prior to taking initial deliveries.

2. All unpaved operation and maintenance site roads shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. After construction activities, all disturbed areas in the project and linear sites shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods.

3. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

4. Visible speed limit signs shall be posted at the site entrance(s).

5. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

6. The disruption of desert pavement shall be minimized to the extent feasible.

4.2.3 Alternative 1: Proposed Action

4.2.3.1 Direct and Indirect Impacts

Construction

Criteria Pollutant Emissions

The annual criteria pollutant emissions that would be generated within the MDAB during each calendar year during the Project's 46 months of construction have been estimated using the methodologies described above. The on-site PM10 and PM2.5 emissions estimates account for reductions from standard dust control measures, such as application of water and/or dust suppressants. The estimates for off-site fugitive dust and VOC, NO_x, CO, and SO_x exhaust include no control-related reductions. This analysis assumes that the control efficiency associated with the standard dust control measures would be 68 percent. As shown in Table 4.2-2, the annual emissions for all pollutants would be below the respective *de minimis* levels and MDAQMD thresholds. Therefore, it can be concluded that the Project would not result in or contribute to an exceedance of an annual AAQS.

TABLE 4.2-2
PROPOSED ACTION ANNUAL CONSTRUCTION EMISSIONS

Construction Year	Emission Source[a]	Annual Emissions (tons/year)					
		VOC	**NO_X**	**CO**	**SO_X**	**PM10[b]**	**PM2.5[b]**
Year 2013	Exhaust and on-site fugitive dust	1.5	9.9	10.1	<0.1	11.1	2.7
	Off-site dust	---	---	---	---	0.7	0.2
	Total	**1.5**	**9.9**	**10.1**	**<0.1**	**11.8**	**2.8**
Year 2014	Exhaust and on-site fugitive dust	1.7	9.1	15.0	<0.1	4.4	1.3
	Off-site dust	---	---	---	---	1.2	0.33
	Total	**1.7**	**9.1**	**15.0**	**<0.1**	**5.6**	**1.6**
Year 2015	Exhaust and on-site fugitive dust	1.7	8.8	15.5	<0.1	11.2	2.7
	Off-site dust	---	---	---	---	1.3	0.3
	Total	**1.7**	**8.8**	**15.5**	**<0.1**	**12.5**	**3.0**
Year 2016	Exhaust and on-site fugitive dust	1.9	8.4	20.3	<0.1	4.1	1.2
	Off-site dust	---	---	---	---	1.9	0.5
	Total	**1.9**	**8.4**	**20.3**	**<0.1**	**6.0**	**1.9**
de minimis level		100	100	100	100	100	100
MDAQMD Threshold		25	25	100	25	15	15
Exceeds Threshold?		No	No	No	No	No	No

NOTES:

[a] Exhaust and on-site fugitive dust emissions were estimated by AECOM (2012) and off-site fugitive dust emissions from vehicle travel on paved roads were estimated by ESA (2012).

[b] PM10 and PM2.5 emissions account for various on-site dust control measures resulting in a control efficiency of 68% relative to uncontrolled emissions; other pollutant emissions do not account for emissions control reductions.

SOURCES: AECOM, 2012; ESA, 2012.

Table 4.2-3 provides the estimated maximum daily criteria pollutant emissions that would be generated within the MDAB during construction of the Project. The maximum daily emissions for CO, VOC, SO_x, PM10, and PM2.5 would occur during Month 30, and the maximum daily emissions for NO_x would occur during Month 6. As with the annual emissions, it was assumed that the general fugitive dust control measures would achieve an overall efficiency of 68 percent relative to on-site construction activities (SCAQMD, 2007). As shown in Table 4.2-3, the maximum daily emissions for VOC, NO_x, CO, SO_x, and PM2.5 are below the respective MDAQMD thresholds. Therefore, it can be concluded that the Project would not result in or contribute to an exceedance of an applicable daily or hourly AAQS and the associated construction impacts would be adverse, but would not be substantial. With regard to PM10, the estimated maximum daily emissions would exceed the MDAQMD threshold, indicating that Project-related PM10 emissions could result in an exceedance of the state PM10 24-hour AAQS.

TABLE 4.2-3
PROPOSED ACTION MAXIMUM DAILY CONSTRUCTION EMISSIONS

Emission Source[a]	Maximum Daily Emissions (pounds/day)					
	VOC	NO_x	CO	SO_x	PM10[b]	PM2.5[b]
Off-road Equipment Exhaust	9	84	33	0.0	3	3
Vehicle Exhaust	14	50	185	0.3	4	3
On-site Fugitive Dust	0	---	0	---	110	23
Paved Road Fugitive Dust	0	---	0	---	19	5
Total Maximum Daily Emissions	23	135	218	0.3	136	34
MDAQMD Threshold	137	137	548	137	82	82
Exceeds Threshold?	No	No	No	No	Yes	No

NOTE: Total maximum daily NO_x emissions include a slight rounding error.

[a] Exhaust and on-site fugitive dust emissions were estimated by AECOM (2012) and off-site fugitive dust emissions from vehicle travel on paved roads were estimated by ESA (2012).

[b] PM10 and PM2.5 emissions account for various on-site dust control measures resulting in a control efficiency of 68 percent relative to uncontrolled emissions; other pollutant emissions do not account for emissions control reductions.

SOURCES: AECOM, 2012; ESA, 2012.

The maximum daily PM10 emissions shown in Table 4.2-3 include both combustion exhaust emissions and fugitive dust. Fugitive dust sources would contribute approximately 129 pounds out of the 136 pounds of the total maximum daily PM10 emissions. To reduce fugitive dust emissions during construction, the Applicant has proposed to implement APM AIR-1, which includes various construction dust control measures, including frequent watering of disturbed areas during grading, increased use of soil stabilizers on roads during construction, installation of gravel ramps, and street sweeping to reduce accumulation of dirt, etc. (see Section 4.2.2 for the specific actions that would be implemented under APM AIR-1).

AECOM estimates that implementation of APM AIR-1 would increase the overall dust control efficiency from 68 percent associated with the general dust control measures, to approximately

80 percent (AECOM, 2012) based on control efficiency ratings identified by SCAQMD for various individual dust control measures (SCAQMD, 2007). However, similar to the discussion above in Section 4.2.1.1, it is not possible to calculate the exact combined control efficiency rating that would be associated with APM AIR-1. For example, the SCAQMD control efficiency rate for mud/dirt track-out on paved roads is up to 80 percent; however, mud and dirt track-out is only one of nine dust sources considered in the AP-42 paved road travel dust emission estimate (USEPA, 2011). Assuming that the nine dust sources contribute to paved road dust equally, the mud and dirt track-out measures identified in APM AIR-1 could control only up to 9 percent of the total paved road dust emissions. In addition, many of on-site control measures identified in APM AIR-1 already were considered with implementation of the general control measures assumed in the construction emission estimates provided in Tables 4.2-2 and 4.2-3. Although the control efficiency for the on-site dust control measures in APM AIR-1 could be more than 68 percent, a control efficiency of 80 percent has not been substantiated for on-site and off-site fugitive dust emissions.

However, even with the assumption that 80 percent of the on-site dust emissions could be controlled, the MDAQMD daily threshold would continue to be exceeded. With an 80 percent control, the 110 pounds of daily on-site fugitive dust emissions would be reduced to 67 pounds. Combined with an assumed 9 percent control efficiency for paved roadway dust, which would result in approximately 17 pounds of paved road dust, and the 7 pounds associated with exhaust emissions, the combined daily PM10 emissions would be 91 pounds, which would exceed the MDAQMD daily threshold.

Toxic Air Contaminants

MDAQMD requirements for health risk assessments categorize project sites by land use type and define the distance from the project site within which sensitive receptors must be considered for increased health risk. The worst case potential impact radius is associated with "Any industrial project" which requires that sensitive receptors within 1,000 feet of the project be considered. Though solar projects are not specifically identified in the categories, this worst case radius was assumed as the criterion for determining potential risks from exposure to DPM during construction. Using the associated definition of sensitive receptors, which include residences, schools, daycare centers, playgrounds, and medical facilities, it was determined that there would be little risk from exposure to DPM during construction because the closest sensitive receptors is located approximately 2.6 miles (13,200 feet) from the proposed solar plant site, and approximately 0.6 mile (3,200 feet) from a location along the gen-tie line south of I-10.

Operation and Maintenance

Criteria Pollutants

Table 4.2-4 and Table 4.2-5 show the estimated annual and maximum daily criteria pollutant emissions that would be generated each year during operation of the Project. These emission estimates do not include reductions associated with any emission controls. The annual and maximum daily emissions of all the criteria pollutants are below the respective NEPA *de minimis* levels and the MDAQMD thresholds. Impacts associated with operation and maintenance of the Project would not be expected to result in or contribute to an exceedance of a federal or state AAQS.

TABLE 4.2-4
PROPOSED ACTION ANNUAL OPERATION AND MAINTENANCE EMISSIONS

Source	Maximum Annual Emissions (tons/year)									
					PM10			PM2.5		
	VOC	NOx	CO	SO_x	Exhaust	Dust	Total	Exhaust	Dust	Total
On-Site Equipment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
On-Site Vehicles	<0.1	<0.1	<0.1	<0.1	<0.1	7.7	7.7	<0.1	0.8	0.8
Off-Site Vehicles	<0.1	0.1	0.4	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.1
Total Emissions	<0.1	0.1	0.5	<0.1	<0.1	7.9	7.9	<0.1	0.8	0.8
de minimis level	100	100	100	100	---	---	100	---	---	100
MDAQMD Threshold	25	25	100	25	---	---	15	---	---	15
Exceeds Threshold?	No	No	No	No	---	---	No	---	---	No

SOURCE: AECOM, 2012.

TABLE 4.2-5
PROPOSED ACTION MAXIMUM DAILY OPERATION AND MAINTENANCE EMISSIONS

Source	Maximum Daily Emissions (pounds/day)									
					PM10			PM2.5		
	VOC	NOx	CO	SOx	Exhaust	Dust	Total	Exhaust	Dust	Total
On-Site Equipment	<0.1	0.8	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	0.0	<0.1
On-Site Vehicles	<0.1	0.2	0.1	<0.1	<0.1	42.3	42.3	<0.1	4.2	4.2
Off-Site Vehicles	0.1	0.5	2.5	<0.1	0.1	1.0	1.1	<0.1	0.2	0.2
Total Emissions	0.2	1.5	3.2	<0.1	0.1	43.3	43.4	0.1	4.4	4.5
MDAQMD Threshold	137	137	548	137	---	---	82	---	---	82
Exceeds Threshold?	No	No	No	No	---	---	No	---	---	No

SOURCE: AECOM, 2012.

To reduce fugitive dust emissions during operation, the Applicant has proposed to implement APM AIR-2, which requires paving (or other road stabilizers) of the main on-site access roads, stabilization of all unpaved on-site access roads, on-site vehicle speed restrictions, covering of material transport vehicles, and minimization of the disturbance of desert pavement. Implementation of APM AIR-2 would reduce emissions of fugitive dust during operation, but it would not preclude the disturbance of desert pavement. Therefore, to reduce the impacts associated with the potential disruption of desert pavement, Mitigation Measure AQ-1 is recommended. It would require the application of non-toxic soil stabilizers to all areas where desert pavement has been disturbed. Implementation of Mitigation Measure AQ-1 would reduce the effects associated with the potential disturbance of desert pavement.

Toxic Air Contaminants

Due to the negligible amount of emissions that would be generated during operation and maintenance of the Project (see Tables 4.2-4 and 4.2-5), and because the closest sensitive receptors are located approximately 2.6 miles (13,200 feet) from the solar plant site, and approximately 0.6 mile (3,200 feet) from a location along the gen-tie line south of I-10, the risk from exposure to DPM during Project operation and maintenance would be negligible.

Decommissioning

At the end of the 30-year term of the ROW grant, Project operation and maintenance would cease and associated facilities would be decommissioned and dismantled, and the site would be restored over a period of approximately 24 months. Decommissioning activities could generate temporary air pollutant emissions similar to those that would occur during construction of the Project (see above).

4.2.4 Alternative 2: Reduced Acreage

4.2.4.1 Direct and Indirect Impacts

Construction

Criteria Pollutant Emissions

The annual criteria pollutant emissions that would be generated within the MDAB during each calendar year during the 24 months of construction for Alternative 2 have been estimated using the methodologies described in Section 4.2.1. For the purposes of this analysis, it is assumed that construction activities for Alternative 2 would begin in March 2013, and conclude in February 2015. As shown in Table 4.2-6, the annual emissions for 2013 and 2014 would be the same as for the Proposed Action; however, emissions for 2015 would be considerably less under Alternative 2 given that there would only be 2 months of active construction. Therefore, Alternative 2 would not result in or contribute to an exceedance of an annual AAQS.

Table 4.2-7 provides the estimated maximum daily criteria pollutant emissions that would be generated within the MDAB during construction of Alternative 2. The maximum daily emissions for CO, VOC, and SO_x would occur during Month 12, the maximum daily emissions for NO_x would occur during Month 6, and the maximum daily emissions of PM10 and PM2.5 would occur during Month 10. As shown in Table 4.2-7, the maximum daily emissions for VOC, NO_x, CO, SO_x, and PM2.5 would be below the respective MDAQMD thresholds. Therefore, it would not result in or contribute to an exceedance of an applicable daily or hourly AAQS. With regard to PM10, the estimated maximum daily emissions would exceed the MDAQMD threshold, indicating that PM10 emissions could result in an exceedance of the state PM10 24-hour AAQS. It should be noted that all of the maximum daily emissions would slightly decrease under Alternative 2 relative to the Proposed Action, with the exception of NO_x emissions, which would be the same.

TABLE 4.2-6
ALTERNATIVE 2 ANNUAL CONSTRUCTION EMISSIONS

Construction Year	Emission Source[a]	Annual Emissions (tons/year)					
		VOC	NO_x	CO	SO_x	PM10[b]	PM2.5[b]
Year 2013	Exhaust and on-site fugitive dust	1.5	9.9	10.1	<0.1	11.1	2.7
	Off-site dust	---	---	---	---	0.7	0.2
	Total	**1.5**	**9.9**	**10.1**	**<0.1**	**11.8**	**2.8**
Year 2014	Exhaust and on-site fugitive dust	1.7	9.1	15.0	<0.1	4.4	1.3
	Off-site dust	---	---	---	---	1.2	0.33
	Total	**1.7**	**9.1**	**15.0**	**<0.1**	**5.6**	**1.6**
Year 2015	Exhaust and on-site fugitive dust	0.2	0.9	2.0	<0.1	0.5	0.1
	Off-site dust	---	---	---	---	0.2	0.0
	Total	**0.2**	**0.9**	**2.0**	**<0.1**	**0.7**	**0.1**
de minimis level		100	100	100	100	100	100
MDAQMD Threshold		25	25	100	25	15	15
Exceeds Threshold?		No	No	No	No	No	No

NOTE: Total maximum daily emissions may include a slight rounding error.

[a] Exhaust and on-site fugitive dust emissions were estimated by AECOM (2012) and off-site fugitive dust emissions from vehicle travel on paved roads were estimated by ESA (2012).

[b] PM10 and PM2.5 emissions account for various on-site dust control measures resulting in a control efficiency of 68% relative to uncontrolled emissions; other pollutant emissions do not account for emissions control reductions.

SOURCES: AECOM, 2012; ESA, 2012.

TABLE 4.2-7
ALTERNATIVE 2 MAXIMUM DAILY CONSTRUCTION EMISSIONS

Emission Source[a]	Maximum Daily Emissions (pounds/day)					
	VOC	NOx	CO	SOx	PM10[b]	PM2.5[b]
Off-road Equipment Exhaust	11	84	40	0.0	4	3
Vehicle Exhaust	10	50	122	0.2	3	3
On-site Fugitive Dust	0	---	0	---	112	23
Paved Road Fugitive Dust	0	---	0	---	12	3
Total Maximum Daily Emissions	21	135	162	0.2	131	32
MDAQMD Threshold	137	137	548	137	82	82
Exceeds Threshold?	No	No	No	No	Yes	No

NOTE: Total maximum daily NO_x emissions include a slight rounding error.

[a] Exhaust and on-site fugitive dust emissions were estimated by AECOM (2012) and off-site fugitive dust emissions from vehicle travel on paved roads were estimated by ESA (2012).

[b] PM10 and PM2.5 emissions account for various on-site dust control measures resulting in a control efficiency of 68 percent relative to uncontrolled emissions; other pollutant emissions do not account for emissions control reductions.

SOURCES: AECOM, 2012; ESA, 2012.

The maximum daily PM10 emissions shown in Table 4.2-3 include both combustion exhaust emissions and fugitive dust. Fugitive dust sources would contribute approximately 112 pounds out of the 131 pounds of the total maximum daily PM10 emissions. To reduce fugitive dust emissions during construction, the Applicant has proposed to implement APM AIR-1 (see Section 4.2.2 for the specific measures that would be implemented under APM AIR-1). AECOM estimates that implementation of APM AIR-1 would increase the overall dust control efficiency from 68 percent associated with the general dust control measures, to approximately 80 percent (AECOM, 2012) based on control efficiency ratings identified by SCAQMD for various individual dust control measures (SCAQMD, 2007). However, it is not possible to calculate the exact combined control efficiency rating that would be associated with APM AIR-1 (see Sections 4.2.1.1 and 4.2.3.1). Although the control efficiency for the on-site dust control measures in APM AIR-1 could be more than 68 percent, a control efficiency of 80 percent has not been substantiated for on-site and off-site fugitive dust emissions.

However, even with the assumption that 80 percent of the on-site dust emissions could be controlled, the MDAQMD daily threshold would be exceeded. With an 80 percent control, the 112 pounds of on-site fugitive dust would be reduced to 70 pounds. Combined with an assumed 9 percent control efficiency for paved roadway dust, which would result in approximately 11 pounds of paved road dust, and the 7 pounds associated with exhaust emissions, the combined PM10 emissions would be 88 pounds, which would exceed the MDAQMD's daily threshold.

As under the Proposed Action, Alternative 2 NO_x emission levels would not reach the threshold established by MDAQMD.

Toxic Air Contaminants

The distances to the closest sensitive receptors (i.e., residences) under Alternative 2 would be the same as under the Proposed Action. Therefore, there would be little risk from residential exposure to DPM during construction of Alternative 2 and emissions of DPM from construction would not be expected to cause adverse health risks at any sensitive receptor in the vicinity of Alternative 2.

Operation and Maintenance

Criteria Pollutants

The annual and maximum daily criteria pollutant emissions that would be generated each year for operation of Alternative 2 would be approximately half of the emissions presented in Tables 4.2-4 and 4.2-5 for the Proposed Action. The annual and maximum daily emissions of all the criteria pollutants would be below the respective NEPA *de minimis* levels and the MDAQMD thresholds. Therefore, impacts associated with operation and maintenance of Alternative 2 would not be expected to result in or contribute to an exceedance of a federal or state AAQS.

As under the Proposed Action, Unit 1 under Alternative 2 would be constructed in an area with mature desert pavement. Therefore, to reduce the impacts associated with the potential disruption of desert pavement, implementation of Mitigation Measure AQ-1 would be recommended: it would require the application of non-toxic soil stabilizers to all areas where desert pavement has been disturbed. Implementation of Mitigation Measure AQ-1 would ensure that impacts under Alternative 2 associated with the potential disturbance of desert pavement would not be substantial.

Toxic Air Contaminants

Due to the negligible amount of emissions that would be generated during operation and maintenance of Alternative 2, and because the closest sensitive receptors are located far from the Project site, the risk from exposure to DPM during operation and maintenance of Alternative 2 would be negligible. Therefore, emissions of DPM from operation and maintenance of Alternative 2 would not cause adverse health risks at any sensitive receptor location.

Decommissioning

Decommissioning activities under Alternative 2 could generate temporary air pollutant emissions similar to those that would occur during construction of Alternative 2 (see above).

4.2.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.2.5.1 Central Route

Direct and Indirect Impacts

Criteria Pollutants

The Central Route would be a total of approximately 12.5 miles long. This is approximately 86 percent of the length of gen-tie that would be constructed under the Proposed Action. The daily activities that would be associated with construction of the Central Route would be expected to be the same as required for the proposed gen-tie line under the Proposed Action, so the total maximum daily emissions would be the same as those under the Proposed Action (see Tables 4.2-3 and 4.2-4). Therefore, as under the Proposed Action, the Central Route would contribute to an overall impact relative to maximum daily emission of PM10. However, given the shorter length, the Central Route would take approximately one fewer month to construct. For the purposes of this analysis, it is assumed that construction activities associated with the Proposed Action gen-tie line would occur during construction Month 6 (August 2013) through Month 13 (March 2014). Therefore, the total annual emissions associated with the Central Route would include one fewer month of transmission line construction work in 2014 compared to the Proposed Action. This would equal approximately 0.1 ton less CO, 0.1 ton less NO_x, and no measureable difference for the other criteria pollutants for year 2014 annual emissions compared to the emissions presented for the Proposed Action (see Table 4.2-2). The Central Route would not result in or contribute to an exceedance of an annual AAQS.

Toxic Air Contaminants

The distance to the closest sensitive receptor (i.e., a residence) to the portion of the Central Route that varies from the proposed gen-tie line route would be approximately 0.4 mile (2,100 feet).

This would be a shorter distance to a residence compared to the portion of the Proposed Action gen-tie line that varies from the Central Route, which would be approximately 0.8 mile (4,224 feet) from a residence. However, the Central Route would be farther than the MDAQMD's recommended 1,000-foot buffer distance for the assessment of TACs; therefore, there would be little risk from residential exposure to DPM during construction of the Central Route gen-tie line and emissions of DPM from construction of the Central Route would not be expected to cause adverse health risks at any sensitive receptor.

Air pollutant emissions and associated impacts related to the operation and maintenance of the Central Route would be identical to that of the Proposed Action gen-tie line as described in Section 4.2.3.1 above. Decommissioning activities associated with the Central Route could generate temporary air pollutant emissions similar to those that would occur during construction of the Central Route (see above).

4.2.5.2 Western Route

Direct and Indirect Impacts

Criteria Pollutants

The Western Route would be a total of approximately 15.5 miles long. This is approximately 10 percent longer than what would be constructed under the Proposed Action. It is expected that the daily activities associated with construction of the Western Route would be the same as required for the proposed gen-tie line, so the total maximum daily emissions would be the same as those under the Proposed Action (see Tables 4.2-3 and 4.2-4). Therefore, as under the Proposed Action, the Western Route would contribute to an overall impact relative to maximum daily emission of PM10. However, given the longer overall length, the Western Route would take approximately one additional month to construct compared to the Proposed Action. For the purposes of this analysis, it is assumed that construction activities associated with the proposed gen-tie line would occur during construction Month 6 (August 2013) through Month 13 (March 2014). Therefore, the total annual emissions associated with the Western Route would include one additional month of transmission line construction work in 2014 compared to the Proposed Action. This would equal approximately 0.1 additional ton of CO, 0.1 additional ton of NO_x, and no measureable difference for the other criteria pollutants for year 2014 annual emissions compared to the emissions presented for the Proposed Action (see Table 4.2-2). The Western Route would not result in or contribute to an exceedance of an annual AAQS.

Toxic Air Contaminants

The distance to the closest sensitive receptor (i.e., residences) to the portion of the Western Route that varies from the proposed gen-tie line would be approximately 0.5 mile (2,600 feet). This would be a shorter distance to a residence compared to the portion of the proposed gen-tie line that varies from the Western Route, which would be approximately 0.8 mile (4,224 feet) from a residence. However, the Western Route would be farther than the MDAQMD's recommended 1,000-foot buffer distance for the assessment of TACs; therefore, there would be little risk from residential exposure to DPM during construction of the Western Route and emissions of DPM from construction of the Western Route would not be expected to cause adverse health risks.

Air pollutant emissions and associated impacts related to the operation and maintenance of the Western Route would be identical to that of the Proposed Action gen-tie line and access road route as described in Section 4.2.3.1 above. Decommissioning of the Western Route could generate temporary air pollutant emissions similar to those that would occur during construction of the Western Route (see above).

4.2.6 Alternative 4: No Action Alternative

Under Alternative 4, none of the air resources-related impacts of the Project and no noticeable change from existing conditions would occur.

4.2.7 Cumulative Impacts

The geographic scope considered for potential cumulative impacts to regional air quality is the MDAB. Long-term Project operation and maintenance would not cause emissions that would exceed the MDAQMD thresholds (see Section 4.2.3.1, *Direct and Indirect Impacts*). In addition, Mitigation Measure AQ-1 would be implemented to reduce the long-term fugitive dust impacts associated with the potential disruption of desert pavement.

Project-related construction activities, as described in Section 4.2.3.1, *Direct and Indirect Impacts*, would result in short-term emissions of PM10 that would exceed the MDAQMD thresholds. Impacts would occur from short-term construction-related PM10 emissions and associated cumulative impacts when combined with the emissions-related impacts of the cumulative projects described in Section 4.1.5, *Cumulative Scenario Approach*, within the MDAB to the extent such projects would be constructed concurrently with the Project.

With regard to impacts on sensitive receptors, the geographic scope considered for potential cumulative impacts on sensitive receptors are projects located within approximately 1,000 feet of the Project that are also located within 1,000 feet of a sensitive receptor, such as a residence. The Project would be constructed in a remote area of Riverside County, where the closest sensitive receptor (i.e., residences) would be at least 0.6 mile (3,200 feet) from any component of the Project. The only project identified in Section 4.1.5, *Cumulative Scenario Approach*, that meets this criterion is the BSPP, which would be immediately south of the Project site and within 1,000 feet of a residence on its southern border. However, given that the residence on the BSPP southern border would be approximately 2.6 miles from the Project site, Project-related air pollutant concentrations at the residence would be negligible.

Construction of the Project would not cause a substantial impact related to the generation of odors from diesel equipment emissions because construction activities would be intermittent and spatially dispersed, and associated odors would dissipate quickly from the source. Projects in the cumulative scenario are not expected to cause diesel-related odors that would intermingle with those of the Project.

4.2.8 Mitigation Measures

AQ-1: The Applicant shall ensure that all areas where desert pavement has been disturbed during construction of the Project shall be applied with a non-toxic soil stabilizer prior to Project operation. The Applicant shall develop, for review and approval by the BLM, a plan that outlines the frequency of non-toxic soil stabilizer applications based on the specifications of the selected soil stabilizer.

4.2.9 Residual Impacts after Mitigation Incorporated

There would be a substantial residual Project-specific and cumulative impact related to short-term construction emissions of PM10 after mitigation measures have been incorporated because emissions would not be reduced to below MDAQMD thresholds.

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4.3 Biological Resources – Vegetation

4.3.1 Methodology for Analysis

This analysis of potential impacts of the Proposed Action and Alternatives to vegetation resources relies on a literature review, biological reconnaissance survey and coordination with appropriate permitting agencies including the USFWS and CDFG. A literature review was conducted to determine the federal and state-listed endangered, threatened, rare, and special-status plant species that have potential to occur within the Project vicinity. The literature review included a search of the CNDDB Electronic Inventory for the nine USGS 7.5' topographic quadrangles that surround the Project; as well as the federal and state publications. Literature related to BLM-listed Sensitive species in the California Desert District Office area (CDCA, NECO) and invasive weeds was reviewed. The following Project-specific documents also were reviewed:

1. Tetra Tech EC, Inc. and A. Karl. 2011a. Biological Resources Technical Report, McCoy Solar Energy Project, Riverside County, CA. Prepared for McCoy Solar, LLC, August 2011 (see Appendix C).

2. Tetra Tech EC, Inc. and A. Karl. 2011b. *Fall 2011 Plants and Supplemental Wildlife Survey Report, McCoy Solar Energy Project, Riverside County, CA*. Prepared for McCoy Solar, LLC, December 2011 (see Appendix C).

3. Tetra Tech EC, Inc. 2012a. McCoy Solar Energy Project Response to Data Request. (January 11, 2012).

This section analyzes potential impacts to vegetation resources from Project construction, operation and maintenance, and decommissioning. This analysis addresses potential impacts of the Project to special-status plant species, sensitive natural communities and other vegetation resources. Direct, indirect, and cumulative impacts are analyzed and quantified.

Impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In desert ecosystems the definition of permanent impacts must reflect the slow recovery rates of its plant communities. For the purposes of this analysis and following CDFG guidance, all ground disturbance activity is considered a permanent impact due to the long time period for natural revegetation to occur in the desert. Natural recovery rates from disturbance in desert ecosystems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within 5 years after damage from heavy vehicle traffic (Gibson et al., 2004 as cited in CEC, 2010); however, for larger magnitude projects, severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery with complete ecosystem recovery requiring over 3,000 years (Lovich and Bainbridge, 1999).

The analysis and environmental protection measures presented in this PA/FEIS were reviewed to provide consistency with approved mitigation measures that were presented in Appendices D through G of the NECO Plan/FEIS relating to desert tortoise, desert restoration, public education, and limitations on cumulative new surface disturbance (BLM, 2002). All practicable means to avoid or minimize environmental harm by the plan have been adopted.

4.3.2 Applicant Proposed Measures

The Applicant proposed the following APMs to address potential effects to vegetation, wetland, and riparian resources. These measures primarily were intended to avoid or reduce potential direct and indirect Project impacts to wildlife resources, specifically to desert tortoise and its habitat; however, they also would reduce Project impacts to vegetation resources identified in this chapter. APMs for Project impacts to vegetation, wetland, and riparian resources are listed below. The impact analysis assumes that the applicable APMs would be implemented as part of the Project.

BIO-2a. Biological Resources Mitigation and Monitoring Plan (BRMMP). The BRMMP will outline steps to implement the protection measures; document their implementation; and monitor their effectiveness. The BRMMP will identify the terms and conditions of any permits associated with the Project, including, but not limited to, the USFWS §7 Biological Opinion, CDFG §2081 Incidental Take Permit, and CDFG Streambed Alteration Agreement. The BRMMP will be submitted to the BLM and USFWS for approval prior to the start of ground disturbance.

BIO-2c. Worker Environmental Training. The Applicant will prepare and implement site-specific Worker Environmental Training to inform Project personnel about the biological constraints of the Project. The training will be included in the BRMMP and will be developed and presented by a qualified Project biologist prior to the commencement of construction activity. All Project personnel must attend the training. The training will include information regarding the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the Project. Special emphasis will be placed on protection measures developed for the desert tortoise and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation.

BIO-2d. Construction-related Activities. Existing roads will be utilized wherever possible to avoid unnecessary impacts. New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area and will minimize surface disturbance in native habitats, where practical. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Along the linear facilities, the anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and/or flagging prior to construction to avoid natural resources, where possible. Outside the Project boundaries, personnel will utilize established roadways (paved or unpaved) for traveling to and from the Project Area, including for transmission line construction. No work in unfenced and uncleared habitat will occur except under the direct supervision of a BM. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Best Management Practices will be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within 2-days of discovery. Additionally, fueling of equipment will take place within existing paved roads and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. All vehicles and equipment will be in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Employees and contractors will look under vehicles and equipment for the presence of desert tortoises prior to movement. No equipment will be moved until the animal has left voluntarily or an AB removes it.

BIO-2n. Weed Management Plan. The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area.

BIO-2o. Water Application for Dust Control. The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. A BM will patrol these areas to ensure water does not pool for long periods of time and potentially attract desert tortoises, common ravens, and other wildlife.

BIO-2p. Cleanup and Restoration; Revegetation Plan. The Applicant will ensure that all unused material and equipment will be removed upon completion of construction activities or maintenance activities conducted outside the permanently fenced sites (this includes non-emergency and emergency repairs). Upon completion, all construction equipment and refuse, including, but not limited to wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, metal or plastic containers will be removed from the site and disposed of properly. Any unused or leftover hazardous products will be properly disposed of off-site. The Applicant will prepare and implement a Revegetation Plan to restore temporarily disturbed areas.

BIO-4. Desert Tortoise Compensation. To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant will provide compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat in accordance with the NECO Plan (BLM, 2002). (Approximately 4,500 acres of Category 3 habitat would be disturbed). This excludes 38 acres of sand dunes, agricultural areas, and areas that are currently developed or disturbed along the access road. Acreage of disturbance was based on the best available Project plans and would be adjusted, based on pre- and post-construction aerial photography, to reflect the final Project disturbance footprint. Because the construction of Unit 1, Unit 2, and the linear facilities would be phased, compensation obligations (e.g., security deposits and the actual funding or acquisition of mitigation land) should be apportioned as follows:

a. Unit 1: 2,259 acres at a 1:1 ratio;
b. Unit 2: 2,178 acres at a 1:1 ratio; and
c. Linear facilities: 106 acres at a 1:1 ratio.

The following qualitative criteria would be used to select compensation lands to ensure that they provide mitigation for the incidental take of desert tortoises:

a. Compensation lands should be part of a larger block of lands that are either already protected or planned for protection, or feasibly could be protected by a public resource agency or a private biological reserve organization.

b. Parcels should provide habitat that is as good as or better than the habitat being impacted by the Project. Preferably, the lands would comprise sufficiently good habitat that they are either currently occupied or could be occupied by the desert tortoise once they are protected from anthropogenic impacts and/or otherwise enhanced.

c. Parcels should not be subject to such intensive recreational, grazing, or other uses that recovery is rendered unlikely or lengthy. Nor should those invasive species that are likely to jeopardize habitat recovery (e.g., Sahara mustard [*Brassica tournefortii*]) be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration.

d. The parcels should be connected to occupied desert tortoise habitat or in sufficiently close proximity to known occupied tortoise habitat such that an unencumbered genetic flow is possible. Preferably, the existing populations of desert tortoise on these lands would represent populations that are stable, recovering, or likely to recover.

e. The parcels should be consistent with the goals, objectives, and recovery actions of an accepted recovery strategy (e.g., recovery plan) for the desert tortoise if possible.

BIO-5. Protection Measures during Decommissioning/Closure. Project Decommissioning: The planned operating life of the Project is 30 years. In the event the Project permanently shuts down, and no other project will occupy the same industrial space, the Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase. Prior to decommissioning, a plan will be finalized and approved by the BLM. The Applicant shall retain an AB for the decommissioning phase of the Project to ensure that all environmental protection measures are implemented. The Applicant will submit the names and qualifications of all proposed biologists to the USFWS and BLM for review and approval at least 30 days prior to decommissioning activities and prior to initiation of any tortoise handling. Decommissioning activities will not begin until the ABs are approved by the aforementioned agencies.

An additional APM is relevant to this analysis, **HYDRO-1**, *Impacts to State-jurisdictional Waters*, which is discussed in Section 4.20, *Water Resources.*

4.3.3 Alternative 1: Proposed Action

4.3.3.1 Direct and Indirect Impacts

Potential direct impacts on vegetation include disruption, trampling, or removal of rooted vegetation resulting in a reduction in the total acres of native vegetation and actions that unequivocally cause a reduction of total numbers of plants and/or reduction or loss of total area, diversity, vigor, structure, or function of vegetative habitat. Direct impacts also could include decreased plant vigor or health from reduced water availability or dust accumulation on photosynthetic surfaces.

Indirect impacts can occur later in time or be farther removed in distance while still being reasonably foreseeable and related to the project. Potential indirect impacts of the Project include the introduction of invasive species by various vectors or conditions that compete with native species and can result in habitat degradation.

Construction

Native Vegetation Communities

Sonoran Creosote Bush Scrub is the dominant native vegetation community on the solar plant site and also occurs on portions of project linear corridors. It is estimated that Unit 1 supports approximately 2,199 acres, Unit 2 supports approximately 2,073 acres, and the off-site linear corridors support approximately 100 acres of creosote scrub habitat (a total of 4,372 acres) that would be permanently affected by the Project. Direct impacts to creosote bush scrub include the permanent loss of native plant communities and fragmentation from adjacent or nearby native vegetation communities. Other temporary indirect impacts from the Proposed Action could occur to surrounding vegetation communities from grading activities disturbing soils and creating air-born, fugitive dust, which may disrupt photosynthesis and other metabolic processes, or sedimentation to or erosion of vegetated areas. In addition to the implementation of APM BIO-2p, which includes a Revegetation Plan, this impact would be reduced through the implementation of Mitigation Measures VEG-1 through VEG-10, which identify measures to protect special-status plants and require that a Special-Status Plant Species Impact Avoidance and Mitigation Plan be prepared to compensate for the loss of creosote desert scrub, and avoid, reduce, or mitigate impacts to native vegetation communities.

Stabilized and Partially Stabilized Dunes and Sand Transport Corridor

The western portion of the gen-tie line south near I-10 is exclusively within stabilized and partially stabilized dune habitat and within a regional sand transport corridor. Construction of the gen-tie support towers, gen-tie maintenance road and spur roads, and the 230 kV switchyard located near the CRS would cause direct, permanent impacts to sand dunes within the Project footprint. The 240-foot wide study corridor includes 38.0 acres of dune habitat. Half of this area (19 acres) is subject to permanent impacts and the remaining area (19 acres) is subject to temporary impacts. Temporary impacts to dune habitats could occur in association with string pulling sites, and equipment and vehicle staging areas located south of I-10. Because constructed roads would be built at-grade, linear facilities outside the solar plant boundary would have little direct impact on the sand transport corridor other than the temporary and permanent loss of habitat. Indirect impacts on stabilized and partially stabilized sand dunes include facilitating the spread of invasive weeds, including Sahara mustard. Sahara mustard increases dune stabilization, and therefore degrades dune habitat. Proposed activities at the solar plant site would not impact dune habitat; however, the gen-tie corridor traverses dune habitats. APM BIO-2n provides for preparation of a Weed Management Plan to address the management of invasive weeds.

Additional requirements for this plan are provided in Mitigation Measure VEG-9. This plan would reduce the potential for the introduction of invasive species during Project construction.

Ephemeral Drainages and Sensitive Plant Communities

Direct impacts include permanent loss of hydrological, geomorphic, and biological functions and values in up to 165.2 acres of vegetated ephemeral streams and unvegetated ephemeral dry washes, and 4.2 acres of desert dry wash woodland on the Project site, gen-tie line and distribution line (Figure 3.3-3; Table 4.3-4). Indirect impacts include potential alterations to hydrological connectivity to areas downstream of the Project site, including off-site desert dry wash woodland, vegetated ephemeral streams and unvegetated ephemeral dry wash. Other indirect impacts include head-cutting on drainages upslope and erosion/sedimentation downslope. Without implementation of protective measures, dust generated during construction could directly adversely affect off-site native vegetation communities immediately adjacent to the Project. Similarly, indirect impacts could occur to desert dry wash woodland habitat in McCoy Wash, downstream of the Project site as a result of construction activities due to an increase in the rate, volume, and sediment load of storm water runoff. Direct impacts on desert dry wash woodland located adjacent to and downstream from the solar plant site could introduce invasive plant species into these areas. While ephemeral drainages on the site would be subject to disturbance, the Project would be designed to maintain predevelopment hydraulic conditions in the natural watercourses and minimize the placement of solar arrays in large, established channels. This would minimize the alteration of hydrologic conditions downstream from the Project. In addition to APM HYDRO-1, the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11 would avoid, or reduce some of the direct and indirect impacts to ephemeral drainages (i.e., waters of the state).

Special-Status Plants - Direct Impacts

No federal or state-listed plant species occur within the study area, and so none would be affected. Permanent direct impacts would occur to six non-listed special-status plant species that are documented in the study area. One of these, Harwood's eriastrum (*Eriastrum harwoodii*), is a BLM Sensitive species. These special-status plant species identified in Table 4.3-2, including all documented populations of desert unicorn plant (*Probocidea altheaifolia*), Harwood's milk-vetch (*Astragalus insularis* var. I), Las Animas colubrina (*Colubrinia*), ribbed cryptantha (*Cryptantha costata*), Harwood's eriastrum, and Utah milkvine (*Cynanchum utahense*) on the solar plant site, would be directly and permanently affected through direct removal during Project construction. Additionally, populations of desert unicorn plant, Harwood's milk-vetch, ribbed cryptantha, Harwood's eriastrum, and Utah milkvine that occur on the gen-tie alignment and could be permanently or temporarily affected during construction of support towers, the gen-tie maintenance road and spur roads, and the 230 kV switchyard.

Direct impacts to special-status plants include the loss of plants during site grading, accidental crushing of plants during construction including during site clearing and grubbing, and from vehicle staging atop plant populations. There is an additional chance that new special-status plant populations could be located on the Project site or linear corridors prior to construction. If present, these populations also would be directly affected. The implementation of Mitigation Measure VEG-7, which would avoid and minimize special-status plant impacts, and Mitigation

Measure VEG-10, which requires a Special-Status Plant Species Impact Avoidance and Mitigation Plan that includes preconstruction surveys and salvage activities for special-status plants and cacti, would reduce these impacts.

Special-Status Plants - Indirect Impacts

Indirect impacts to special-status plants may occur within and outside the Project disturbance area during and following construction. Potential indirect effects to special-status plants include: facilitating the introduction and spread of non-native invasive plant species; altering surface hydrology in downstream off-site areas and the geomorphic processes that support rare plants and their habitat (e.g., disrupted aeolian and fluvial sand transport processes from obstructions and diversions); fragmenting plant populations and potentially disrupting gene flow; disruption of pollinators; increased risk of fire; disturbance of the structure and ecological functioning of biological soil crusts, which may affect seed germination, reduce soil nutrition, and render the soil vulnerable to water and wind erosion; herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during Project construction and operation.

The impacts of stressors (such as the spread of invasive plants, hydrologic and geomorphic alterations, etc.) on special-status plants are well-documented in the literature. The benefits of restoration and enhancement to rare plant populations have been demonstrated in a variety of projects conducted by public and private land managers, including BLM, NPS, The Nature Conservancy, USFS, California State Parks, and the CNPS. The application of APM BIO-2n (*Weed Management Plan*) and the implementation of Mitigation Measure VEG-9, which provides further requirements for the Invasive Weed Management Plan (IWMP) would somewhat reduce the potential for the introduction of invasive species during Project construction.

Cacti, Yucca, and Native Trees

Several species of non-listed cactus and native desert trees occur within the Study Area including California barrel cactus (*Ferocactus cylindraceus* var. *cylindraceus*), cottontop cactus (*Echinocactus polycephalus* var. *polycephalus*), common fishhook cactus (*Mammillaria tetrancistra*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), blue palo verde (*Parkinsonia florida* [=*Cercidium floridium* ssp. *floridium*]), ironwood (*Olneya tesota*), mesquite (*Prosopis glandulosa*), and ocotillo (*Fouquieria splendens* ssp. *splendens*) (Tetra Tech EC and Karl 2011a; 2011b). Smoketree (*Psorothamnus spinosum*) was also documented immediately adjacent to the solar plant site. It is anticipated that all cacti and native trees in the roughly 4,605-acre Project disturbance area would be directly affected by site development. The implementation of Mitigation Measure VEG-7, which would avoid and minimize rare plant impacts, and Mitigation Measure VEG-10, which requires a Special-Status Plant Species Impact Avoidance and Mitigation Plan that includes preconstruction surveys and salvage activities for special-status plants and cacti, would reduce these impacts.

Operation and Maintenance

Invasive Non-Native Plants

The maintenance of access roads both within and outside the Project site boundary has the potential to introduce invasive plant species into disturbed areas and facilitate the spread of invasive weeds. Vehicles and crews inadvertently could track in clinging seeds and/or parts of invasive weeds, thus facilitating their spread. The application of APM BIO-2n and implementation of Mitigation Measure VEG-9 would reduce these impacts.

Decommissioning

Decommissioning is anticipated to only directly affect areas that were previously disturbed during installation of the facilities. Thus, the direct removal of native vegetation communities and special-status plants is not anticipated for decommissioning activities. Potential direct and indirect effects to special-status plant populations include the introduction of fugitive dust on exposed topsoil and colonization of the Project site by invasive species during and following site decommissioning.

A summary of the overall acreages of impacts associated with the Proposed Action and Alternatives is provided in Table 4.3-1. Acreages calculated for impacts were based on the best information available at the time of publication of the PA/FEIS for permanent disturbance areas. These acreages are based on information provided by the Applicant regarding construction of each Project component. Alternative 3, the Central Route and Western Route gen-tie line and access road alternatives, do not include the solar plant site or the distribution line. This is indicated by a dash (“–”) in the solar plant site and distribution line rows of Table 4.3-1. Similarly, Alternative 2 does not include a gen-tie line and access road component, as indicated by the “–” in the gen-tie line disturbance rows of Table 4.3-1.

Tables 4.3-2 through 4.3-4 summarize the direct impacts for the Proposed Action and each alternative on special-status plant species, sensitive natural communities, and riparian habitat and state-jurisdictional resources, respectively, as described in more detail below.

4.3.4 Alternative 2: Reduced Acreage

4.3.4.1 Direct and Indirect Impacts

The direct and indirect impacts of the Reduced Acreage Alternative on vegetation resources would be similar in nature, though roughly half the magnitude of the Proposed Action. The types of impacts that would occur under Alternative 2 similarly would result in the direct and permanent loss of all special-status plants and vegetation communities within the disturbance footprint, and indirect impacts to vegetation resources would be similar to those discussed for the Project.

Anticipated direct impacts to special-status plants of Alternative 2 are presented in Table 4.3-2. Under this alternative, direct impacts to Harwood’s milk-vetch, Ribbed cryptantha, and Harwood’s eriastrum would be slightly reduced compared to Alternative 1, and direct impacts to Abram’s spurge, Las Animas colubrina, Utah milkvine, and desert unicorn plant would be greatly

TABLE 4.3-1
COMPARISON OF ACTION ALTERNATIVES RELATIVE TO VEGETATION COMMUNITY IMPACTS

Vegetation Communities by Project Component	Impact within Project Area (acres)			
	Alternative 1	Alternative 2	Alternative 3 Central Route[b]	Alternative 3 Western Route[c]
Solar Plant Site				
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood)	1.5	0.0	–	–
Vegetated Ephemeral Channels (sparse trees)	40.9	2.8	–	–
Vegetated Ephemeral Channels (no trees)	97.7	47.3	–	–
Unvegetated Drainages	25.3	10.2	–	–
Sonoran Creosote Bush Scrub	4,271.6	2,198.7	–	–
Gen-Tie Line Disturbance				
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood)	1.8	–[a]	1.2	10.3
Mesquite Bosque	0.5	–	0.4	0.5
Creosote - Big Galleta Grass	0.0	–	0.0	0.4
Vegetated Ephemeral Channels (no trees)	0.8	–	0.2	0.0
Unvegetated Drainages	0.5	–	0.3	0.0
Sonoran Creosote Bush Scrub	96.4	–	24.8	134.0
Stabilized and Partially Stabilized Desert Dunes	38.0	–	38.0	38.0
Distribution Line				
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood)	0.9	0.9	–	–
Sonoran Creosote Bush Scrub	4.1	4.1	–	–
Agricultural Land	2.3	2.3	–	–
Total Disturbance Area	**4,582.3**	**2,266.3** [a]	**69.9**	**183.2**

NOTES:

a If selected, Alternative 2 could be supported by either the proposed Eastern Route or the alternative Central Route; therefore, gen-tie line disturbance areas are not included.
b These acreages presume that the Central Route would traverse an approximately 2-mile portion of the adjacent BSPP site that has already been graded and therefore does not contain vegetation.
c Impacts to vegetation communities along the Western Route were not mapped at the same level of detail as the Eastern and Central Routes. Because it is not known exactly where along the alignment disturbance would occur (e.g., where poles would be located), to conservatively estimate impacts to vegetation communities, the impact area is presented for the entire gen-tie line alignment at the ROW width of approximately 100 feet.

SOURCE: Tetra Tech EC, Inc. and A. Karl, 2011a, 2011b; Tetra Tech EC, Inc. 2012a, 2012b

reduced. A majority the populations for the latter four species occur in Unit 2, which would not be impacted under Alternative 2. Indirect impacts to special-status plants from the potential for spread of invasive weeds would be reduced under Alternative 2 in direct proportion to the reduced size of the alternative. The implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11 would reduce direct impacts to special-status plants while APM BIO-2n and the implementation of Mitigation Measure VEG-9 would reduce the potential indirect impacts related to the introduction of invasive species during Project construction, operation and maintenance, and decommissioning.

TABLE 4.3-2
OVERALL SUMMARY OF IMPACTS ON SPECIAL-STATUS PLANT SPECIES

Species	Estimated Number of Individual Impacted Plants[a]			
	Alternative 1	Alternative 2[b]	Alternative 3 Central Route[c]	Alternative 3 Western Route[c]
Harwood's milk-vetch	>181	>181	7	0
Abram's spurge	3,996	1,125	0	0
Las Animas colubrina	167	1	0	1
Ribbed cryptantha	>13,911	> 13,911	0	0
Utah milkvine	>2,407	>137	>50	4
California ditaxis	0	0	0	0
Harwood's eriastrum (= Harwood's phlox)	30	30	0	0
Desert unicorn plant	>743	>286	0	0

NOTES:

[a] Note that plant impact numbers are for individual plants located within the disturbance footprint
[b] Includes occurrences on solar plant site Unit 1, Alternative 1 gen-tie alignment, and distribution line
[c] Includes only plants identified on portions of Alternative 3 that are unique to that alignment

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a, 2011b

TABLE 4.3-3
OVERALL SUMMARY OF IMPACTS ON SENSITIVE VEGETATION COMMUNITIES

Vegetation Community	Estimated Impact Area (acres)			
	Alternative 1	Alternative 2	Alternative 3 Central Route	Alternative 3 Western Route
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	4.2	0.9[a]	1.2	10.3
Creosote Bush-Big Galleta Grass Association	0.0	0.0	0.0	0.4
Sand Dunes[b]	19 (19)	0.0	19 (19)	19 (19)

NOTES:

[a] The 0.9-acre impact area includes impacts for the solar plant (0.0 acre) and distribution line (0.9 acre); if selected, Alternative 2 could be supported by either the proposed Eastern Route or the alternative Central Route.
[b] Impacts to sand dunes are equivalent for all gen-tie alternatives and include 19 acres of permanent impacts and 19 acres of temporary impacts

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a, 2011b; Tetra Tech EC, Inc. 2012a, 2012b

TABLE 4.3-4
SUMMARY OF IMPACTS ON RIPARIAN HABITAT AND STATE-JURISDICTIONAL RESOURCES

	Impacts by Project Alternative (acres)			
Species	**Alternative 1**	**Alternative 2**[a]	**Alternative 3 Central Route**	**Alternative 3 Western Route**
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	4.2	0.9	1.2	10.3
Mesquite Bosque	0.5	0.0	0.4	0.5
Vegetated Ephemeral Channels (sparse trees)	40.9	2.8	0.0	0.0
Vegetated Ephemeral Channels (no trees)	98.5	47.3	0.2	0.0
Unvegetated (approximately less than or equal to 5% cover)	25.8	10.2	0.3	0.0
Total Jurisdictional Area (acres)	169.9	61.2	2.1	10.8

NOTES:

[a] If selected, Alternative 2 could be supported by either the proposed Eastern Route or the alternative Central Route; therefore, gen-tie line disturbance areas are not included.

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a, 2011b; Tetra Tech EC, Inc. 2012a, 2012b

Botanical surveys of the Project site quantified non-listed cacti and trees on the Project site, but their distribution was not mapped. Therefore, the species and number of individual cacti that would be impacted under Alternative 2 are not known. Similarly, the distribution of individual native desert trees was not identified on the Project site; however, habitats that support trees were characterized during focused surveys. Desert dry wash woodland habitat (Blue Palo Verde-Ironwood Woodland Alliance) was exclusively mapped within Unit 2 and does not occur in the Alternative 2 Project area (Table 3.3-1) (Tetra Tech EC and Karl, 2011a; 2011b). Other native desert trees were described within vegetated ephemeral swales on the Project site, for which 2.8 acres of vegetated ephemeral channel (wash-dependent vegetation with sparsely scattered trees) habitat would be impacted on the solar plant site under Alternative 2 (Table 4.3-1). This compares to 40.9 acres of similar habitat that would be impacted under Alternative 1. The implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11, which require a Special-Status Plant Species Impact Avoidance and Mitigation Plan that includes preconstruction surveys and salvage activities for special-status plants and cacti, would reduce these impacts.

Impacts to vegetation communities under Alternative 2 are presented in Tables 4.3-1 and 4.3-3. Under Alternative 2, the project would affect 2,264 acres of natural habitat (excludes 2.3 acres of agricultural land). Creosote bush scrub is the dominant vegetation community, representing 2,202.8 acres of the impact area under Alternative 2. The reduced direct impacts to native vegetation communities under Alternative 2 are directly proportional to the reduced size of the alternative compared to the Proposed Action. The implementation of Mitigation Measure VEG-10 would reduce impacts to native vegetation communities.

Potential indirect impacts to native vegetation communities would be similar to those discussed for Alternative 1. The impact of dust generated by the Project on native vegetation would be somewhat lessened by the implementation of APMs AIR-1 and AIR-2 (Air Resources).

Most of the ephemeral drainages that occur on the Project site are concentrated in the more westerly situated Unit 2, with relatively fewer riparian features in Unit 1 (Table 3.3-1). As a result, Alternative 2 would have substantially fewer impacts on ephemeral drainages and sensitive riparian vegetation communities than Alternative 1. Under Alternative 2, impacts to desert dry wash woodlands and vegetated and unvegetated ephemeral swales would be 61.2 acres (Table 4.3-4). The overall magnitude of the impact would be reduced through APM HYDRO-1 and the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11.

No federally protected wetlands occur on the Project site. Thus, Alternative 2 would not impact federally protected wetlands through direct removal, filling, hydrological interruption, or other means, as defined by CWA §404.

Alternative 2 would not conflict with any local policies or ordinances protecting biological resources.

4.3.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.3.5.1 Central Route

Direct and Indirect Impacts

The Central Route would affect a total of 69.9 acres of natural habitat (Table 4.3-1) including 2.1 acres of riparian habitat (Table 4.3-4), compared to 3.1 acres of riparian habitat compared to the Eastern Route (Table 4.3-1). This value includes 1.2 acres of desert dry wash woodland (Figure 4.3-3). Most of the desert dry wash woodland habitat in the portion that differs from Alternative 1 includes lines that would span sensitive areas without permanent disturbance; however, an all-season access road that parallels the gen-tie line would cause permanent impacts. Direct impacts of these differing areas are generally similar to those under Alternative 1 and include permanent loss of hydrological, geomorphic, and biological functions and values in impacted riparian areas, principally associated with new roads. Direct and indirect impacts to riparian habitat associated with the Central Route would be incrementally smaller than those under Alternative 1 prior to mitigation, but would be somewhat lessened through APM HYDRO-1 and the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11.

Direct impacts to special-status plants would be incrementally greater under the Central Route compared to the comparable portion of Alternative 1, with slightly greater impacts to Harwood’s milk-vetch (seven plants for the Central Route and three for Alternative 1) and Utah milkvine (about 50 plants for the Central Route and none for Alternative 1) (Table 4.3-2). The Central Route would not impact desert unicorn plant for which one plant occurs on the comparable portion of Alternative 1. Direct impacts to other special-status plants would be largely the same as

Alternative 1, and reduced following the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11.

4.3.5.2 Western Route

Direct and Indirect Impacts

The Western Route would affect a total of 183.2 acres of natural habitat (Table 4.3-1) including 10.3 acres of riparian habitat (desert dry wash woodland) (Table 4.3-4), compared to 3.1 acres of riparian habitat compared to the Eastern Route (Table 4.3-1). Most of the sensitive habitat would be spanned by the gen-tie line without permanent disturbance to the habitat beneath. However, each pole would require an individual spur road to provide all-season access (road locations are not specifically defined). Direct impacts include permanent loss of hydrological, geomorphic, and biological functions and values in impacted riparian areas, principally associated with the creation of permanent roads. The riparian impacts associated with the Western Route would be greater than those under Alternative 1 prior to mitigation, but would be lessened somewhat through APM HYDRO-1 and the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, and VEG-11.

Direct impacts to special-status plants would be comparable between the Western Route and Alternative 1. The Western Route would have fewer impacts to Harwood's milk-vetch (no plants for the Western Route and three for Alternative 1) and desert unicorn plant (no plants for the Western Route and one for Alternative 1), and greater impacts to Utah milkvine (four plants for the Western Route and none for Alternative 1) and Las Animas colubrina (one plant for the Western Route and none for Alternative 1) (Table 4.3-2). Direct impacts to other special-status plants would be largely the same as Alternative 1.

4.3.6 Alternative 4: No Action Alternative

Under this alternative, the Project would not be approved by the BLM. As a result, lands administered by BLM would continue to be managed consistent with current land use designations in the CDCA Plan. The MSEP site is within the Riverside East SEZ as designated in the Solar PEIS ROD. The Solar PEIS ROD amended the CDCA Plan to identify lands within the Riverside East SEZ as suitable for solar energy development; therefore, it is very likely that commercial-scale solar development would be promoted within the ROW application area even if this No Action Alternative were selected. All other uses allowable on CDCA MUC-L lands and on the affected private lands would continue to be available. However, because the configuration, nature, location, resource intensiveness, and other factors related to any future solar energy project are unspecified and uncertain, the BLM cannot predict the potential consequences to wildlife resources that might result from such development, and so finds that particular impacts are too speculative to evaluate meaningfully in this PA/FEIS.

4.3.7 Cumulative Impacts

4.3.7.1 Geographic Scope

This cumulative impact analysis evaluates the effects of existing and reasonably foreseeable future projects that threaten plant communities within the Palo Verde Valley. The Proposed Action would be located mostly within the Palo Verde Valley with a portion in the lower Chuckwalla Valley. These areas, shown in Figure 4.3-1, were selected as the geographic scope for the cumulative effects analysis for sensitive vegetation communities (i.e., desert dry wash woodland) and jurisdictional resources and collectively are referred to as the "cumulative analysis area" in this subsection. This scale was selected for the analysis of cumulative effects to better understand the contribution of local projects to effects on sensitive resources near the Project site.

4.3.7.2 Temporal Scope

In addition to construction-related impacts, the Project would have ongoing operational impacts to biological resources. Therefore the temporal scope of the cumulative effects analysis for sensitive vegetation communities includes the construction, operation and maintenance, and decommissioning phases of the Project.

4.3.7.3 Regional Overview

This overview of regional impacts is followed by a more detailed discussion of the effects of past, present, and reasonably foreseeable future projects to biological resources in the Project vicinity.

The California Desert remained a desolate area for the first few decades of the 20th century. Disturbance was more or less restricted to highways, railroad, and utility corridors, scattered mining, and sheep grazing. In the 1940s, several large military reservations were created for military training, testing, and staging areas. The deserts of eastern Riverside County make up 40 percent of the County's land area but less than 1 percent of its population. Outside of the small urban-agricultural center of Blythe, near the Colorado River and Arizona border, there are only a few scattered, small residential and agricultural areas between Indio (to the west) and Blythe; most of the lands are administered by the BLM.

Populations of many of the desert's sensitive plants were considered relatively stable until recently, as the push for renewable energy development has placed some populations at risk. Renewable energy developers have submitted project applications that would collectively cover more than one million acres of the region. Development of these projects could contribute to habitat loss and fragmentation and barriers to gene flow. Although these Projects have or would undergo environmental permitting and analysis under NEPA, CEQA, and/or other federal and state laws to evaluate project-level environmental impacts, even after mitigation of project-level impacts, these projects could collectively contribute to impacts on sensitive resources. Because the Project would largely work within existing contours and does not require large scale vegetation removal or grading, several non-listed special-status plant species and associated vegetation communities that occur on-site are expected to persist following site decommissioning.

Thus, the Project is expected to displace a portion of on-site rare plant populations, but substantial recovery of vegetation resources is expected following site decommissioning.

In the areas identified for renewable energy development in eastern Riverside County, including Palo Verde Valley and Chuckwalla Valley, some of the many sensitive vegetation resources at risk include desert washes and desert dry wash woodland; native, slow-growing vegetation; and special-status plants.

The introduction of nonnative plant species has also contributed to habitat degradation, population declines, and range contractions for many special-status plant species (Boarman, 2002). Combined with the effects of historical grazing and military training, and fragmentation of habitat from highway and aqueduct construction, the proposed wind and solar energy projects have the potential to further reduce and degrade native plant populations. In the context of this large-scale habitat loss, the Project would contribute to the cumulative loss and degradation of habitat for desert plants in the cumulative analysis area.

Details of the vegetation resources within the cumulative analysis area are summarized here and provided more fully in Section 3.3. The Palo Verde Valley and Chuckwalla Valley are located within the Sonoran Desert, which contains a diverse range of vegetation communities including desert scrub, desert wash, and sand dunes. These valleys also include numerous drainages and areas relatively devoid of native vegetation including developed areas, paved roads, highways, access roads, and other disturbed areas. Invasive and noxious weed species are noted within the cumulative analysis area and continue to be an ongoing management issue in the Sonoran Desert. The cumulative analysis area supports habitat for, and populations of, numerous special-status plant species, as described in Section 3.3.

Land use in the cumulative analysis area historically has been altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative analysis area characterize regional development trends. Ongoing development in the area is dominated by renewable energy development. Major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system.

Other projects in the cumulative analysis area include several transmission lines and non-renewable energy development, as well as residential and commercial development. In addition to short-term construction impacts, the Project would have ongoing operational impacts on biological resources. Therefore, all projects that might contribute impacts throughout the temporal scope of the cumulative analysis are considered for this analysis. This would include non-renewable energy, transmission lines, wind power, and solar power projects.

Native Vegetation Communities

The development of numerous large-scale projects, such other solar generation facilities identified in Tables 4.1-3 and 4.1-4, would result in the permanent conversion of desert habitat to industrial and commercial uses. Table 4.3-5 presents the total acreage of vegetation communities

TABLE 4.3-5
SUMMARY OF CUMULATIVE IMPACTS ON NATIVE VEGETATION COMMUNITIES (ACRES)

Vegetation Community[a]	Total Vegetation Communities in the Cumulative Study Area[a]	Impacts to Vegetation Community from Existing Projects (Percent of vegetation Community in Cumulative Study Area)[b]	Impacts to Vegetation Community from Foreseeable Future Projects (Percent of Vegetation Community in Cumulative Study Area)[c]	Contribution of Alternative 1 to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)	Contribution of Alternative 2 to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)	Contribution of Alternative 3 (Central Route) to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)[e]	Contribution of Alternative 3 (Western Route) to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)[e]
Sonoran Creosote Bush Scrub	403,579	954 (0.2%)	42,171 (10.5%)	4,372.1 (10.4%)	2,202.8 (5.2%)	24.8 (0.06%)	134.0 (0.03%)
Desert Dry Wash Woodland	108,335	1,720 (1.6%)	20,035 (18.5%)	4.2 (<0.01%)	0.9 (<0.01%)	1.2 (<0.01%)	10.3 (<0.01%)
Sand Dunes[d]	37,823	1,936 (5.1%)	7,971 (21.1%)	38.0 (0.5%)	0.0 (0.0%)	38.0 (0.5%)	38.0 (0.5%)
Agriculture, Developed	68,415	516 (0.8%)	252 (0.4%)	2.3 [d] (<0.01%)	2.3 [d] (<0.01%)	0.0	0.0

NOTES:

a Vegetation cover types were based on the BLM NECO Plant Communities dataset (BLM, 2002) compiled by the Biogeography Lab at the U.C. Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis, updated during the NECO planning effort (BLM, 2002).

b Includes existing projects and foreseeable future projects within the cumulative analysis area identified in Figure 4.3-1.

c Note that sand dune habitat was derived using land form data, which significantly overlaps with vegetation community data. Most of the sand dune habitat is characterized as Sonoran creosote bush scrub habitat in the BLM NECO Plant Communities dataset.

d Impacted areas from the MSEP include agricultural lands that were previously counted as 'impacted' by the BSPP.

e To facilitate comparison of alternatives, the impact area is presented for the entire gen-tie line alignment, with impacts for areas that are unique to each alignment presented in parentheses.

SOURCE: BLM, 2010; Tetra Tech EC, 2012a

within the geographic scope and the cumulative impacts on each community type from existing and foreseeable future projects. These acreages were calculated using the list of cumulative projects that are located in the Palo Verde Valley and lower Chuckwalla Valley.

A total loss of 10.5 percent of the Sonoran creosote bush scrub habitat and 18.5 percent of the desert dry wash woodland habitat in the cumulative analysis area is projected to occur as a result of existing and foreseeable future projects. As shown in Table 4.3-5, implementation of Alternative 1 would contribute 10.4 percent (1.1 percent of Sonoran creosote bush scrub in the cumulative analysis area) and Alternative 2 would contribute 5.2 percent (0.6 percent of Sonoran creosote bush scrub in the cumulative analysis area) to this cumulative impact on Sonoran creosote bush scrub. If selected, the contribution of an Alternative 3 option would replace the contribution of the Alternative 1 gen-tie line or would be additive with the contribution from Alternative 2, depending on the alternative selected. Sonoran creosote bush scrub is not identified as a BLM or CDFG sensitive vegetation community.

Special-Status Plant Species

As discussed above, the development of numerous large-scale projects, such other wind and solar generation facilities, would result in a substantial permanent conversion of desert habitat to industrial and commercial uses, which would remove habitat for many special-status plant species and cacti. Therefore, the loss of this habitat is anticipated to result in substantial cumulative impacts on populations of many special-status plant species and cacti. However, preparation of the Habitat Enhancement/Restoration Plan, Revegetation Plan (to restore temporarily disturbed areas), Decommissioning and Reclamation Plan, and other plans as required in APM BIO-2p (*Cleanup and Restoration; Revegetation Plan*), and the implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, VEG-11, VEG-12, WIL-4, WIL-10, WIL-15, and WIL-16, provide for the salvage of rare plants and cacti, avoidance of special-status plants whenever possible, compensatory mitigation, and site restoration following decommissioning and would minimize the loss of special-status plant species and protect similar habitat off-site. Implementation of these measures would reduce the Project's contribution to a cumulative impact on special-status plant species, but the effect would remain substantial following the implementation of mitigation. With the limited amount of grading that would occur under the Project due to Project design and the implementation of mitigation measures, on-site special-status plant species and associated vegetation communities are expected to persist following site decommissioning. The protection measures listed above would allow the continued presence of native vegetation communities and rare plant populations during the operational phase of the Project. With the limited ground disturbance, it is reasonable to expect that the Project could disturb 50 percent or less of the on-site Sonoran creosote bush scrub habitat and associated rare plant populations.

Sensitive Natural Communities

The development of numerous large-scale projects, such other wind and solar generation facilities, within the Palo Verde Valley would result in a substantial permanent conversion of desert habitat to industrial or commercial uses. The total projected loss of 18.5 percent of desert dry wash woodland habitat in the cumulative analysis area from existing and foreseeable future projects would result in a cumulative impact. However, the Project was configured to avoid and minimize effects to this natural community. As Table 4.3-5 shows, the estimated impact of between 2.1 and 10.3 acres constitutes less than 0.01 percent of the total future effects to this vegetation community in the cumulative analysis area (Table 4.3-5). However, the implementation of the required Habitat Enhancement/Restoration Plan, Revegetation Plan, Decommissioning and Reclamation Plan, and other plans as required in APMs BIO-2p (*Cleanup and Restoration; Revegetation Plan*), BIO-4 (*Desert Tortoise Compensation*), HYDRO-1 (*Impacts to State-jurisdictional Waters*) and Mitigation Measures VEG-7, VEG-8, VEG-10, VEG-11, VEG-12, WIL-4, WIL-10, WIL-15, and WIL-16, would ensure that the loss of desert dry wash woodland habitat from the MSEP is adequately compensated for and equivalent habitat would be protected off-site. Implementation of these measures would reduce the Project's contribution to a cumulative impact on sensitive natural communities.

4.3.8 Mitigation Measures

VEG-1: Qualifications of Designated Biologist. The Applicant shall assign at least one Designated Biologist to the Project. The Applicant shall submit the resume of the proposed Designated Biologist(s), with at least three references and contact information, to the BLM AO for approval in consultation with CDFG and USFWS.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. Have at least one year of field experience with biological resources found in or near the Project area;
4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS;
5. Possess a CESA Memorandum of Understanding pursuant to §2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the BLM AO, in consultation with CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the mitigation measures.

VEG-2: Duties of the Designated Biologist. The Applicant shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring or trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the Applicant and the BLM AO. The Designated Biologist Duties shall include the following:

1. Advise the Applicant's construction and operation managers on the implementation of the biological resources mitigation measures;
2. Consult on the preparation of the Biological Resources Mitigation, Implementation, and Monitoring Plan (BRMIMP) to be submitted by the Applicant;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;
6. Notify the Applicant and the BLM AO of any non-compliance with any biological resources mitigation measure;
7. Respond directly to inquiries of the BLM AO regarding biological resource issues;
8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures[1]; and
10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, and the BLM AO, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base.

VEG-3: Identification of Biological Monitors. The Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the BLM AO. The resume shall demonstrate, to the satisfaction of the BLM AO, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS-approved biologist (also "Service-approved biologist").

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the mitigation measures, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures.

VEG-4: Duties of Biological Monitors. The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-

[1] Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/

related ground disturbance, grading, boring or trenching. The Designated Biologist shall remain the contact for the Applicant and the BLM AO.

VEG-5: Authority of the Designated Biologist And Biological Monitors. The Applicant's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources mitigation measures. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s) the Applicant's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the Applicant and the construction/operation manager when to resume activities; and

3. Notify the BLM AO and if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

VEG-6: Worker Environmental Awareness Program. The Applicant shall develop and implement a Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the AO. The WEAP shall be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site preconstruction, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the Project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes, reptiles, or other wildlife shall be harmed;

3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;

4. Include a discussion of fire prevention measures to be implemented by workers during Project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;

5. Describe the temporary and permanent habitat protection measures to be implemented at the Project site;

6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist and BLM AO.

VEG-7: Biological Resources Mitigation Implementation and Monitoring Plan. The Applicant shall develop a BRMIMP, and shall submit two copies of the proposed BRMIMP to the BLM AO for review and approval. The Applicant shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Invasive Weed Management Plan (Mitigation Measure VEG-9), the Special-Status Plant Species Impact Avoidance and Mitigation Plan (Mitigation Measure VEG-10) and Decommissioning and Reclamation Plan (Mitigation Measure VEG-12), the Desert Tortoise Relocation Translocation Plan (Mitigation Measure WIL-2), the Raven Management Plan (Mitigation Measure WIL-5), the Burrowing Owl Mitigation and Monitoring Plan (Mitigation Measure WIL-9), and all other biological mitigation and/or monitoring plans associated with the Project.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the Applicant;

2. All biological resources mitigation measures identified as necessary to avoid or mitigate impacts;

3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;

4. All sensitive biological resources to be impacted, avoided, or mitigated by Project construction, operation, and closure;

5. All required mitigation measures for each sensitive biological resource;

6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;

7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

9. All performance standards and remedial measures to be implemented if performance standards are not met;

10. Biological resources-related facility closure measures including a description of funding mechanism(s);

11. A process for proposing plan modifications to the BLM AO and appropriate agencies for review and approval; and

12. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the Project site, or during Project surveys, to the CNDDB per CDFG requirements.

VEG-8: The Applicant shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. ***Limit Area of Disturbance*.** The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, Project vehicles and equipment shall be confined to the flagged areas.

2. ***Minimize Road Impacts*.** New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. ***Minimize Traffic Impacts*.** Vehicular traffic during Project construction and operation shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour within the Project area, on maintenance roads for linear facilities, or on access roads to the Project site, except on paved access roads where the speed limit shall not exceed 45 miles per hour.

4. ***Monitor During Construction*.** In areas that have not been fenced with desert tortoise exclusion fencing and cleared, the Designated Biologist shall be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities.

5. ***Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas*.** Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC, 2006) and Mitigating Bird Collisions with Power Lines (APLIC, 1994) to reduce the likelihood of large bird electrocutions and collisions.

6. ***Avoid Use of Toxic Substances.*** Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

7. ***Minimize Lighting Impacts.*** Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

8. ***Minimize Noise Impacts.*** A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Project. Loud construction activities (e.g., unsilenced high pressure steam blowing and pile driving, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles). Loud construction activities may be permitted from February 15 to April 15 only if:

   a. the Designated Biologist provides documentation (e.g., nesting bird data collected using methods described in Mitigation Measure WIL-7 and maps depicting location of the nest survey area in relation to noisy construction) to the BLM AO indicating that no active nests would be subject to 65 dBA noise, or

   b. the Designated Biologist or Biological Monitor monitors active nests within the range of construction-related noise exceeding 65 dBA. The monitoring shall be conducted in accordance with Nesting Bird Monitoring and Management Plan approved by the BLM AO. The Plan shall include adaptive management measures to prevent disturbance to nesting birds from construction related noise. Triggers for adaptive management shall be evidence of Project-related disturbance to nesting birds such as: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Bird Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of disturbance to the nesting bird.

9. ***Avoid Vehicle Impacts to Desert Tortoise.*** Parking and storage shall occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it would be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS' 2009 Desert Tortoise Field Manual.[2]

10. ***Avoid Wildlife Pitfalls*****:**

   a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day, at the

[2] Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/

end of each workday and at the beginning of each day by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual as described in the Desert Tortoise Relocation/Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed.

11. ***Minimize Standing Water.*** Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action (e.g., coordinating with the contractor to reduce watering frequency) to reduce water application where necessary.

12. ***Dispose of Road-killed Animals.*** Road-killed animals or other carcasses detected on roads near the Project area shall be immediately reported to the Designated Biologist and picked up within 24 hours. The contractor and Designated Biologist shall be responsible for securing all required federal or State permits to handle and dispose of collected animals, including handling and disposal for scientific use. For special-status species roadkill, the Biological Monitor shall contact CDFG, and USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall maintain and report special-status species records as described in Mitigation Measure WIL-3.

13. ***Minimize Spills of Hazardous Materials.*** All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

14. ***Worker Guidelines.*** During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the Project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 25 miles per hour.

15. ***Implement Erosion Control Measures.*** Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter “Waters of the State”. Sediment and other flow-restricting

materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the Project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage shall be stabilized to reduce erosion potential.

16. ***Monitor Ground Disturbing Activities Prior to Pre-Construction Site Mobilization.*** If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

17. ***Revegetation of Temporarily Disturbed Areas.*** The Applicant shall prepare and implement a Revegetation Plan to restore all areas subject to temporary disturbance to pre-Project grade and conditions. Temporarily disturbed areas within the Project area include, but are not limited to: all proposed locations for linear facilities, temporary access roads, berms, areas surrounding the drainage diffusers, construction work temporary lay-down areas not converted to part of the solar field, and construction equipment staging areas. The Revegetation Plan shall include a description of topsoil salvage and seeding techniques and a monitoring and reporting plan, and the following performance standards by the end of monitoring year 2:

    a. at least 80 percent of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and

    b. relative cover and density of plant species within the temporarily disturbed areas shall equal at least 60 percent.

VEG-9: Weed Management Plan. Prior to beginning construction on the Project, the Applicant will prepare, circulate to the BLM for comment and approval, and then implement an Invasive Weed Management Plan that meets the approval of BLM's AO to prevent the spread of existing weeds and the introduction of new weeds to the Project Area. The objective of the Weed Management Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of Project construction, operation, and decommissioning. The Weed Management Plan shall include at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; weed risk assessment and measures to prevent the introduction and spread of weeds; monitoring and surveying methods; and reporting requirements.

The Plan shall be consistent with BLM's *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM, 2007) and the National Invasive Species Management Plan (National Invasive Species Council, 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the Project. The draft plan will be reviewed and approved by the BLM.

The following measures are required in the Plan and will be implemented by the Applicant to monitor and control invasive species:

1. ***Preventative Measures During Construction.*** Equipment Cleaning: To prevent the spread of weeds into new habitats, and prior to entering the Project work areas, construction

equipment will be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment will be inspected to ensure they are free of any dirt or mud that could contain weed seeds and the tracks, feet, tires, and undercarriage will be carefully washed, with special attention being paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis.

a. *Vehicle Washing*: All vehicles will be washed off-site when possible. Should off-site washing prove infeasible, an on-site cleaning station will be set up to clean equipment before it enters the work area. Either high-pressure water or air will be used to clean equipment and the cleaning site will be situated away from any sensitive biological resources. If possible, water used to wash vehicles and equipment will be collected and re-used. Ingress and egress will be limited to defined routes.

b. *Site Soil Management*: Soil management will consist of limiting ground disturbance to the minimum necessary for construction activities and using dust suppressants to minimize the spread of seeds. Disturbed vegetation and topsoil will be re-deposited at or near the area from which they are removed to eliminate the transport of soil-borne invasive weed seeds, roots, or rhizomes. During reclamation of the temporarily cleared areas, the contractor will return topsoil and vegetative material to the areas from which they were stripped. BLM-approved dust suppressants (e.g. water and/or palliative) will be minimized on the site as much as possible, but will use during construction to minimize the spread of airborne weed seeds, especially during very windy days. As appropriate, temporary drift fences may be installed to help control sand movement during construction.

c. *Weed-free Products*: Any use of hay or straw bales on the Project site will be limited to certified weed-free material. Other products such as gravel, mulch, and soil may also carry weeds and these products, too, will be certified weed-free. If needed, mulch will be made from the local, on-site native vegetation cleared from the Project area.

d. *Personnel Training*: Weed management will be part of mandatory site training for all construction personnel and will be included in initial Worker Environmental Awareness Program training briefings. Training will include weed identification and the threat of impacts including impacts to local agriculture, vegetation communities, wildlife, and creating fire potential. Training will also cover the importance of preventing the spread of weeds.

e. *Mechanical Weed Removal*: The Applicant primarily will use mechanical weed removal techniques with the use of herbicides restricted to BLM-approved usage in areas that are not accessible through mechanical means or where mechanical weed removal is impractical.

f. *Herbicides*: The Applicant will use only BLM-approved pre- and/or post-emergent herbicides, as applicable. Pre-emergent herbicides will be applied to the soil before the weed seed germinates and is usually incorporated into the soil with irrigation or rainfall. Post-emergent herbicides will be applied directly to plants. Herbicides will be investigated in detail, made a part of the Invasive Weed Management Plan, and approved by BLM before use.

g. *Pesticides*: Pesticide use will be limited to non-persistent, immobile pesticides applied only in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any pesticide applications, if used, will be conducted within the framework of BLM and DOI policies, and will entail only the use of USEPA registered pesticides.

2. ***Containment and Control Measures.*** When Project monitoring (see below) indicates that invasive species are spreading, invasive species will be removed using mechanical and chemical methods. The Applicant will use mechanical weed removal methods as the preferred method, but herbicides may be used when conditions (such as wind, proximity of native vegetation) are such that the effect on native species is expected to be minimal. During suppression or eradication activities, care will be taken to have the least affect on native plant species. Herbicides used will be limited to those approved by the BLM. Herbicides will be applied before the invasive species flower and set seed.

   If monitoring indicates the spread of athel (*Tamarix* spp.), a woody invasive species, then athel will be controlled by cutting the trees and applying GarlonTM Ultra Herbicide to the stump immediately after cutting. GarlonTM is approved for use on athel by the BLM. All cut material generated during athel clearance will be removed from the site by truck. This material will be covered with a tarp or other material that will keep athel cuttings or seed from being spread by truck movement.

   The Applicant and its contractors will follow the BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the Record of Decision for the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement (BLM, 2007). Personnel responsible for weed control will be trained in the proper and safe use of all equipment and chemicals used for weed control.

3. ***Monitoring.*** Baseline weed conditions will be assessed during the pre-construction phase of the Project, during pre-construction surveys and staking and flagging of construction areas. A stratified random sampling technique will be used to identify and count the extent of weeds on the site.

   Monitoring will take place each year during construction, and annually for three years following the completion of construction. The purpose of annual monitoring will be to determine if weed populations identified during baseline surveys have increased in density or are spreading as a result of the Project. Control methods will be implemented when measurable weed increases, as well as visually verified increases, are detected during monitoring. This will include small patches of unusually high density weeds (e.g., concentrations in swales) that are growing as a result of Project activities.

   During construction, daily monitoring records will be kept by biological monitors that will include information relevant to invasive weeds. During Project operations and maintenance, noxious and invasive weed list and provide monitoring and management appropriate to any new species in coordination with the BLM.

   After the three years of operations monitoring is complete, general management and monitoring of the Project area will be conducted by designated site personnel each year during both the germinating and early growing season (November through April) to eliminate new weed individuals prior to seed set. Throughout construction and long-term monitoring, personnel will be trained to identify weedy and native species and work with a trained vegetation monitor to determine where elimination is necessary.

4. ***Reporting.*** Results of monitoring and management efforts will be included in annual reports and a final monitoring report completed at the end of three years of post-

construction monitoring. Copies of these reports will be kept on file at the site. Copies of each annual report as well as the final monitoring report will be sent to the BLM for review and comment. BLM will use the results of these reports to determine if any additional monitoring or control measures are necessary.

5. ***Success Criteria.*** Weed control will be ongoing on the Project site for the life of the Project, but plan success will be determined by BLM after the three years of operations monitoring through the reporting and review process. Success criteria will be defined as having no more than ten percent increase in a weed species or in overall weed cover in any part of the Project.

VEG-10: Special-Status Plant Species Impact Avoidance and Minimization, and Compensation. For this four-part measure, the Applicant shall: A) prepare and implement a Special-Status Plant Species Impact Avoidance and Mitigation Plan that meets the approval of BLM AO; B) ensure adequate special-status plant surveys and reporting; C) avoid, minimize and mitigate for impacts to special-status plants; and D) fund or support a compensatory mitigation program for special-status plants through land acquisition, restoration/enhancement, or a combination of acquisition and restoration/ enhancement.

The Applicant shall implement measures **VEG-1** through **VEG-8**, and **VEG-10** to avoid, minimize, and compensate for impacts to special-status plant species. In this discussion the term "Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation.

A) Special-Status Plant Impact Avoidance and Minimization Measures

This measure contains the Best Management Practices and other measures designed to avoid accidental impacts to plants occurring outside of the Project Disturbance Area and within 100 feet of the Project Disturbance Area during construction, operation, and decommissioning.

Special-Status Plant Impact Avoidance and Minimization Measures. The Applicant shall incorporate all measures for protecting special-status plants in close proximity to the site into the BRMIMP (Mitigation Measure VEG-7). These measures shall include the following elements:

a) *Site Design Modifications*: Incorporate site design modifications to minimize impacts to special-status plants along the Project linears: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW. Design the engineered channel discharge points to maintain the natural surface drainage patterns between the engineered channel and the outlet of the natural washes that flow toward the south and east, downstream of the Project These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

b) *Establish Environmentally Sensitive Areas (ESAs)*. Prior to the start of any ground- or vegetation-disturbing activities, a qualified Project biologist shall establish ESAs to protect avoided special-status plants that occur outside of the Project Disturbance

Areas and within 100 feet of Project Disturbance Areas. This includes plant occurrences identified during the late season 2011 surveys. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures, such as silt-fencing and sediment controls, may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be clearly identified (with signage or by mapping on site plans) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.

c) *Special-Status Plant Worker Environmental Awareness Program (WEAP)*. The WEAP (Mitigation Measure VEG-6) shall include training components specific to protection of special-status plants that may occur in the Study Area.

d) *Herbicide and Soil Stabilizer Drift Control Measures*. Special-status plant occurrences within 100 feet of the Project Disturbance Area shall be protected from herbicide and soil stabilizer drift. The Invasive Weed Management Plan (Mitigation Measure VEG-9) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's The Global Invasive Species Team (Hillmer and Liedtke, 2003), the USEPA, and the Pesticide Action Network Database.[3]

e) *Erosion and Sediment Control Measures*. Erosion and sediment control measures shall not inadvertently impact special-status plants (e.g., by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, etc.). These measures shall be incorporated in any required Drainage, Erosion, and Sedimentation Control Plans.

f) *Avoid Special-Status Plant Occurrences*. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs.

g) *Monitoring and Reporting Requirements*. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

B) Ensure Adequate Special-Status Plant Surveys And Reporting (Applies to Alternative 3 Routes)

At least 30 days prior to construction, the Applicant shall ensure that botanical surveys have been fully performed and reported on the Alternative 3 Routes, as described below:

1. ***Survey Timing*.** Surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October). Fall-blooming perennials that respond to the cooler, later season storms (typically beginning in September or October) shall only be required if blooms and seeds are necessary for identification or the species are summer-deciduous and require leaves for identification. The surveys shall not be timed to

3 Available at: http://www.pesticideinfo.org

coincide with the statistical peak bloom period of the target species but shall instead be based on plant phenology and the timing of a significant storm event (i.e., a 10mm or greater rain or multiple storm events of sufficient volume to trigger germination, as measured at or within 1 mile of the Project site). Surveys shall occur at the appropriate time to capture the characteristics necessary to identify the taxon.

2. ***Surveyor Qualifications and Training.*** Surveys shall be conducted by a qualified botanist knowledgeable in the complex biology of the local flora, and consistent with CDFG protocols (CDFG, 2009). Each surveyor shall be equipped with a GPS unit and record a complete tracklog; these data shall be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all special-status taxa known to occur within the Sonoran Desert region and the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains.

3. ***Survey Coverage.*** The survey coverage or intensity shall be in accordance with the most recent BLM Survey Protocols, which specify that intuitive controlled surveys shall only be accomplished by botanists familiar with the habitats and species that may reasonably be expected to occur in the project area (BLM, 2009).

4. ***Documenting Occurrences.*** If a special-status plant is detected, the full extent of the population on-site shall be recorded using GPS in accordance with BLM survey protocols. Additionally, the extent of the population within one mile of Project boundaries shall be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the population affected by the Project. For populations that are very dense or very large, the population size may be estimated by simple sampling techniques. When populations are very extensive or locally abundant, the surveyor must provide some basis for this assertion and roughly map the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; the smallest populations may be recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the final botanical report shall be prepared to ensure consistency with definition of an occurrence by CNDDB, i.e., occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single ‘occurrence’. The Applicant shall also submit the raw GPS shape files and metadata, and completed CNDDB forms for each ‘occurrence’ (as defined by CNDDB).

5. ***Reporting.*** Raw GPS data, metadata, and CNDDB field forms shall be provided to the BLM AO within two weeks of the completion of each survey. If surveys are split into two or more periods (e.g., a late summer survey and a fall survey), then a summary letter shall be submitted following each survey period.

6. The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG, 2009), and BLM 2009 guidelines and shall include all of the following components:

a) the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List);

b) the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes;

c) the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area;

d) an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate);

e) a completed CNDDB field form for every occurrence (occurrences of the same species within one-quarter mile or less of each other combined as one occurrence, consistent with CNDDB methodology), and

f) two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with Project features; and a second map that follows the CNDDB protocol for occurrence mapping.

C) Avoidance Requirements for Special-Status Plants

The Applicant shall avoid impacts to special-status plant populations whenever possible, as described below.

1. Mitigation for CNDDB Rank 1, 2, and 3 Plants – Avoidance on Linear Corridors Required: If species with a CNDDB rank of 1, 2, or 3 are detected within the Project Disturbance Area, the Applicant shall prepare and implement a Special-Status Plant Mitigation Plan (Plan) that describes measures to avoid and minimize impacts to plant populations on the Project linear corridors and construction laydown areas, unless such avoidance would create greater environmental impacts in other resource areas (e.g. Cultural Resource Sites) or other restrictions (e.g., FAA or other restrictions for placement of transmission poles). The Applicant shall provide compensatory mitigation as described below in Mitigation Measure VEG-10.D for impacts to Rank 1, 2, and 3 plants that cannot be avoided. The content of the Plan and definitions shall be as described above in Mitigation Measure VEG-10.C (1).

2. Preservation of the Germplasm of Affected Special-Status Plants. For all significant impacts to special-status plants, regardless of whether compensatory mitigation is required, mitigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the Applicant. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the BLM AO.

D) Off-Site Compensatory Mitigation for Special-Status Plants

This section describes performance standards for mitigation for a range of options for compensatory mitigation.

Where compensatory mitigation is required under the terms of Mitigation Measure VEG-10.C, above, the Applicant shall mitigate Project impacts to special-status plant occurrences with compensatory mitigation. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of populations of the target species, and shall meet the performance standards for mitigation described below. Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants, with 3 acres of habitat acquired or restored/enhanced for every acre of habitat occupied by the special-status plant that will be disturbed by the Project Disturbance Area (for example, if the area occupied by the special-status plant collectively measured is 0.25 acre, the compensatory mitigation will be 0.75 acre). The mitigation ratio for Rank 2 plants shall be 2:1. So, for the example above, the mitigation ratio would be 0.5 acre for the Rank 2 plants.

The Applicant shall provide funding for the acquisition and/or restoration/ enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this condition will vary depending on the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation.

The Applicant shall comply with other related requirements of this measure, as follows:

I. *Compensatory Mitigation by Acquisition*: The requirements for the acquisition initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands include all of the following:

1. *Selection Criteria for Acquisition Lands*. The compensation lands selected for acquisition may include any of the following three categories:

   a. Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).

   b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan as described in Mitigation Measure VEG-10.D.II, below.

   c. Unoccupied but Adjacent. The Applicant may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Applicant shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

2. *Review and Approval of Compensation Lands Prior to Acquisition*. The Applicant shall submit a formal acquisition proposal to the BLM AO describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the BLM AO.

3. *Management Plan*. The Applicant or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the BLM AO.

4. *Integrating Special-Status Plant Mitigation with Other Mitigation lands*. If all or any portion of the acquired Desert Tortoise, Waters of the State, or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

5. *Compensation Lands Acquisition Requirements*. The Applicant shall comply with the following requirements relating to acquisition of the compensation lands after the BLM AO, has approved the proposed compensation lands:

    a. Preliminary Report. The Applicant, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM AO. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM AO. For conveyances to the state, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

    b. Title/Conveyance. The Applicant shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the BLM AO. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code §65965), or to BLM or other public agency approved by the BLM AO. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the BLM AO. If an entity other than CDFG holds a conservation easement over the compensation lands, the BLM AO may require that CDFG or another entity approved by the BLM AO, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Applicant shall obtain approval of the BLM AO of the terms of any transfer of fee title or conservation easement to the compensation lands.

    c. Initial Protection and Habitat Improvement. The Applicant shall fund activities that the BLM AO requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities are estimated to be $330 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code §65965), if it meets the approval of the BLM AO in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

d. Property Analysis Record. Upon identification of the compensation lands, the Applicant shall conduct a PAR or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the BLM AO before it can be used to establish funding levels or management activities for the compensation lands.

e. Long-term Maintenance and Management Funding. In accordance with Mitigation Measure VEG-13 (*Phasing*), the Applicant shall deposit in the National Fish and Wildlife Foundation's (NFWF) Renewable Energy Action Team (REAT) Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR or PAR-like analysis conducted for the compensation lands.

f. The BLM AO, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

g. Interest, Principal, and Pooling of Funds. The Applicant shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) holder/manager to ensure the following requirements are met:

    i. Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the BLM AO and is designed to protect or improve the habitat values of the compensation lands.

ii. Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the BLM AO or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.

iii. Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the BLM AO.

h. Other Expenses. In addition to the costs listed above, the Applicant shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

i. Mitigation Security. The Applicant shall provide financial assurances in accordance with Mitigation Measure VEG-13 (*Phasing*) to the BLM AO to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account or another form of approved security ("Security"). The amount of the Security shall be $2,280 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is impacted by the project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the BLM AO, the Applicant shall obtain the BLM AO's approval of the form of the Security. The BLM AO may draw on the Security if the BLM AO determines the Applicant has failed to comply with the requirements specified in this condition. The BLM AO may use money from the Security solely for implementation of the requirements of this condition. The BLM AO's use of the Security to implement measures in this condition may not fully satisfy the Applicant's obligations under this condition, and the Applicant remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Applicant in whole or in part upon successful completion of the associated requirements in this condition.

j. The Applicant may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the REAT Account established with the NFWF. To use this option, the Applicant must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Applicant, the Applicant shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the Applicant, the remaining balance shall be returned to the Applicant.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the BLM AO, in consultation with CDFG, BLM, and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the BLM's certification of the Project.

II. *Compensatory Mitigation by Habitat Enhancement/Restoration*: As an alternative or adjunct to land acquisition for compensatory mitigation the Applicant may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants, with improvements applied to 3 acres, or 2 acres, respectively, of habitat for every acre of special-status plant habitat directly or indirectly disturbed by the Project Disturbance Area (for example, if the area occupied by the special-status plant collectively measured is 0.25 acre, the improvements would be applied to an area equal to 0.75 acre at a 3:1 ratio, or 0.5 acre at a 2:1 ratio). Examples of suitable enhancement projects include but are not limited to the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control of invasive non-native plants that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

If the Applicant elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system (Master et al., 2009; see also Morse et al., 2004) with one of the following threat ranks: a) long-term decline >30 percent; b) an immediate threat that affects >30 percent of the population, or c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").

If the Applicant elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the BLM AO for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall be $2,280 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the BLM AO. The Habitat Enhancement/Restoration Plan shall include each of the following:

1. *Goals and Objectives*. Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special-status plant occurrence that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").
2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species.
4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. Budget. Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. Contingency Plan. Describe the contingency plan for failure to meet annual goals.
10. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife

Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

VEG-11: Mitigation for Impacts to Sensitive Riparian Habitat and State Waters. The Applicant shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the state and to satisfy requirements of California Fish and Game Code §§1600 and 1607.

1. ***Acquire Off-Site State Waters*:** The Applicant shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 215.2 acres of state jurisdictional waters, or comparable area based on actual project impact to jurisdictional features that meets BLM and CDFG mitigation ratios, as identified in APM HYDRO-1 (Table 2-7, *Applicant Proposed Measures*). The parcel or parcels comprising the 215.2 acres of ephemeral washes shall include at least 6 acres of desert dry wash woodland. Under Alternative 2, the mitigation requirement for impacts to riparian habitat and state waters would be a minimum of 63.3 acres that included at least 1.5 acres of desert dry wash woodland. If Alternative 3 were constructed the mitigation requirements for impacts to riparian habitat and state waters would be incrementally greater than under Alternative 1; however, would need to be finalized to include the impacts of road facilities on riparian habitat located on Project linears south of the Project. The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4 (*Desert Tortoise Compensatory Mitigation*). Mitigation for impacts to state waters shall occur within the Palo Verde and surrounding watersheds, as close to the Project site as possible. If security is posted in accordance with Provision 2 below (Security for Implementation of Mitigation), the Applicant shall acquire, in fee or in easement, the land, no more than 18 months after the start of Project ground-disturbing activities.

2. ***Security for Implementation of Mitigation*:** The Applicant shall provide financial assurances to the BLM AO and CDFG to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the BLM AO and CDFG in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing project activities. Prior to submittal to the BLM AO, the Security shall be approved by the BLM AO, in consultation with CDFG and the USFWS, to ensure funding. An estimate of $485,640 in required Security funds was developed for land costs or the estimated costs of enhancement and endowment (see WIL-4, Compensatory Mitigation for Desert Tortoise Habitat Losses, for a discussion of the assumptions used in calculating the Security) based on an estimate of $2,280 per acre (215.2 acres) to fund acquisition, enhancement and long-term management. For Alternative 2 the Security amounts is estimated to be $144,324. The estimate for Alternative 3 is $485,640, which does not include road impacts on portions of the Central Route or Western Route that deviates from the proposed Project gen-tie line. These this amounts may change based on land costs or the estimated costs of enhancement and endowment. The final amount due will be determined by the PAR analysis conducted pursuant to Mitigation Measure WIL-4 and approved by the BLM AO and CDFG. The final mitigation acreage is also subject to CDFG concurrence with project impacts to waters of the state that were developed by the Applicant.

3. ***Preparation of Management Plan*:** The Applicant shall submit to the BLM AO and CDFG a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to

enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

4. ***Code of Regulations*****:** The Applicant shall provide a copy of the BRMMP and CDFG permits to all contractors, subcontractors, and the Applicant's Project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel upon demand. The BLM AO reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the Applicant. If the BLM AO in consultation with CDFG, determines that the Applicant has breached any of the terms or conditions or for other reasons, including but not limited to the following:

    a. The information provided by the Applicant regarding streambed alteration is incomplete or inaccurate;

    b. New information becomes available that was not known to it in preparing the terms and conditions; or

    c. The Project or Project activities as described in the Staff Assessment have changed.

5. Best Management Practices: The Applicant shall also comply with the following conditions to protect drainages near the Project Disturbance Area:

    a. The Applicant shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.

    b. The Applicant shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.

    c. The Applicant shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the Applicant to ensure compliance.

    d. Spoil sites shall not be located at least 30 feet from the boundaries and drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.

    e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage by the Applicant or any party working under contract or with the permission of the Applicant, shall be removed immediately.

    f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state.

    g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage.

h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

VEG-12: Channel Decommissioning and Reclamation Plan. At least 12 months prior to Project closure, the Applicant shall prepare a draft Decommissioning and Reclamation Plan to remove the engineered diversion channels from the Project site, and implement the final plan upon site closure. The goal of the plan shall be to restore the site's topography and hydrology to a relatively natural condition and to establish native plant communities within the Project Disturbance Area. The Channel Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall be consistent with the guidelines in BLM's 43 CFR 3809.550 et seq., subject to review and revisions from the BLM AO in consultation with USFWS and CDFG.

VEG-13: Phasing. The Applicant shall provide compensatory mitigation for the total Project Disturbance Area and may provide such mitigation in multiple phases for distinct construction elements (e.g., Unit 1, Unit 2, etc.). These phases will generally include installation of fencing, clearing, grubbing and grading, and development of common facilities first, followed by the remaining power block units. All construction activities for the non-linear features during these subsequent phases will occur within desert tortoise exclusionary fenced areas that have been cleared in accordance with USFWS protocols.

Prior to initiating each phase of construction the Applicant shall submit the actual construction schedule, a figure depicting the locations of proposed construction and amount of acres to be disturbed. Mitigation acres are calculated based on the compensation requirements for each resource type including desert tortoise (Mitigation Measure WIL-4), western burrowing owl (Mitigation Measure WIL-9), Mojave fringe-toed lizard (Mitigation Measure WIL-10), and state waters (Mitigation Measure VEG-11). Compensatory mitigation for each phase shall be implemented according to the timing required by each condition.

4.3.9 Residual Impacts after Mitigation Incorporated

The Proposed Action and the two action alternatives would cause substantial impacts to vegetation resources, eliminating all of the Sonoran creosote bush scrub and other native plant and wildlife communities within the disturbance area of Alternatives 2 and 3. The Project also would directly and indirectly affect an extensive network of desert washes comprising approximately 165.2 acres of vegetated ephemeral streams and unvegetated ephemeral dry washes, and 4.2 acres of desert dry wash woodland, which are regulated as state-jurisdictional ephemeral drainages. Alternatives 1 and 3 would impact vegetation resources on the more biologically diverse west side of the Study Area, which would be avoided under Alternative 2. As discussed in the sections above, the recommended avoidance and minimization measures as well as compensatory mitigation would effectively offset direct, indirect, and cumulative impacts in varying, but unquantified degrees and assure compliance with state and federal laws. It is expected that some residual adverse effects would remain after mitigation measures have been applied, including net losses in waters of the state and vegetation resources.

4.4 Biological Resources – Wildlife

4.4.1 Methodology for Analysis

This analysis of potential impacts of the Proposed Action and Alternatives to wildlife resources relies on a literature review, biological reconnaissance survey, focused wildlife surveys and coordination with appropriate permitting agencies including the USFWS and CDFG. A literature review was conducted to determine the federal and state-listed endangered, threatened, and special-status wildlife species that have the potential to occur within the Project vicinity. The literature review also included a search of the CNDDB Electronic Inventory for the nine USGS 7.5' topographic quadrangles that surround the Project. As discussed in Section 3.4, focused wildlife surveys were conducted for desert tortoise, Couch's spadefoot toad, burrowing owl, golden eagle (nest survey), and avian species (i.e., avian point counts), and are summarized in the following Project-specific documents:

1. Tetra Tech EC, Inc. and A. Karl, 2011a. *Biological Resources Technical Report, McCoy Solar Energy Project, Riverside County, CA*. Prepared for McCoy Solar, LLC, August 2011 (see Appendix C-1).

2. Tetra Tech EC, Inc. and A. Karl, 2011b. *Fall 2011 Plants and Supplemental Wildlife Survey Report, McCoy Solar Energy Project, Riverside County, CA*. Prepared for McCoy Solar, LLC, December 2011 (see Appendix C-2).

3. Tetra Tech EC, Inc., 2011. *Golden Eagle Risk Assessment, McCoy Solar Energy Project, Riverside County, CA*, August, 2011 (see Appendix C-3).

4. Tetra Tech EC, Inc., 2012a. McCoy Solar Energy Project Response to Data Request, January 11, 2012.

5. Tetra Tech EC, Inc. and A. Karl, 2012. *Winter 2011-2012 Avian Point Count Survey Report, McCoy Solar Energy Project, Riverside County, CA*, March, 2012 (see Appendix C-4).

6. Tetra Tech EC, Inc., 2012b. *Couch's Spadefoot Breeding Season Surveys near Blythe, CA for the McCoy Solar Energy Project*. Technical Memorandum, December 3, 2012.

This section analyzes potential direct, indirect, and cumulative impacts to wildlife resources from construction, operation and maintenance, and decommissioning of the Proposed Action and Alternatives. Direct impacts are those resulting from the Project and occur at the same time and place. Indirect impacts are caused by the Project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the Proposed Action.

Wildlife impact analyses typically characterize effects as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state within a relatively brief time frame (e.g., within one season of initial disturbance). In desert ecosystems, the definition of permanent impacts must reflect the slow recovery rates of vegetation communities. For the purposes of this analysis and following CDFG guidance, all ground disturbance activity is considered a permanent impact due to the long time period for natural revegetation to occur in the desert.

The analysis and environmental protection measures presented in this PA/FEIS were reviewed to provide consistency with approved mitigation measures that were presented in Appendices D through G of the NECO Plan/FEIS relating to desert tortoise, desert restoration, public education, and limitations on cumulative new surface disturbance (BLM, 2002). All practicable measures to avoid or minimize environmental harm by the plan have been adopted.

4.4.2 Applicant Proposed Measures

The following APMs were developed by the Applicant to address potential effects to wildlife resources. These measures generally were intended to avoid or reduce potential direct and indirect Project impacts to wildlife resources, and desert tortoise in particular. APMs related to Project impacts to wildlife resources are listed below. The impact analysis assumes that the applicable APMs would be applied as part of the Project; additional agency identified mitigation measures are identified later in this section.

BIO-1: Desert Tortoise-specific Protection Measures During Construction.

a. ***Environmental Compliance Personnel*****:** Environmental compliance personnel shall be employed to oversee the implementation of all desert tortoise protection measures in accordance with a BO. An ECM will be assigned to the Project who shall be an on-site staff member of the Project. The ECM will be responsible for facilitating implementation of the environmental conditions of the Project and for coordinating compliance with the BLM and USFWS. A Project Lead Biologist and alternate Lead Biologists with demonstrated expertise with desert tortoise shall oversee compliance with the protection measures for the desert tortoise and other special-status species. There also shall be ABs that have demonstrated expertise to conduct specific activities for desert tortoise protection; the Lead Biologist also will be an AB. Additionally, qualified BMs will assist the AB in enforcing APMs. McCoy Solar shall submit the names and qualifications of the proposed Lead Biologist(s) and all ABs to the USFWS and BLM for review and approval prior to pre-construction clearance surveys. Project activities involving ground disturbance shall not begin until the Lead Biologist and ABs are approved by the aforementioned agencies. Replacement of Lead Biologist and ABs would require USFWS and BLM approval. The ECM, ABs, and BMs shall have the authority to halt all non-emergency activities that are in violation of the protection measures, or if a desert tortoise wanders into a work site. Work will proceed only after hazards to the desert tortoise are removed, the species no longer is at risk, or the animal has been moved from harm's way by the AB. The ABs will document any incident occurring during Project activities which is in non-compliance with the protection measures stated in the BO. The Lead Biologist and ECM shall ensure that appropriate corrective action is taken. Corrective actions shall be documented by the AB or BM. The following incidents shall require immediate cessation of the Project activities causing the incident:

   1. Imminent threat of injury or death to a desert tortoise.
   2. Unauthorized handling of a desert tortoise.
   3. Operation of construction equipment or vehicles outside of areas secured with desert tortoise fencing without a BM present, except on designated roads.
   4. Conducting any construction activity without an AB or BM present where one is required.

b. ***Desert Tortoise Exclusion Fencing*****:** Prior to the onset of ground disturbing activities, the entire solar plant site will be fenced with a permanent tortoise exclusion fence per current USFWS requirements (USFWS, 2009) to keep tortoises from entering the solar plant site during construction and operation phases. The fencing type will be 1-inch by 2-inch vertical mesh galvanized fence material, extending at least 2 feet above the ground and buried at least 1 foot. Where burial is impossible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent tortoises from digging under the fence. Tortoise-proof gates will be established at all site entry points. Fence construction may be completed during any time of the year (USFWS, 2010). As necessary, linear facilities (e.g., gen-tie line and switchyard) will be temporarily fenced to prevent tortoise entry during construction. Alternatively, monitoring during construction can be used to protect tortoises instead of temporary fencing. Temporary fencing will follow current USFWS guidelines for permanent fencing and supporting stakes will be sufficiently spaced to maintain fence integrity; burial may be minimized to avoid surface disturbance. All fence construction will be monitored by an AB or BMs to ensure that no desert tortoises are harmed. Following installation, all permanent exclusion fencing will be inspected monthly and during all major rainfall events; temporary fencing will be inspected at least weekly, or more often as necessary. Any damage to the fencing will be repaired immediately. All fencing erected during a tortoise activity period or prior to tortoises exiting brumation will be inspected at least three times each day for a minimum of 2 weeks (or for a minimum of two weeks after tortoises become active following brumation), to search for any tortoises that might be fence-walking; at least one search will occur immediately prior to lethal ambient temperatures.

c. ***Pre-Construction Clearance Surveys*****:** Within 1 week prior to fence installation, the AB and/or approved BMs will survey the staked fence line location for all desert tortoise burrows and tortoises, covering a swath of at least 90 feet centered on the fence line, using 15-foot-wide transects. All potential desert tortoise burrows or pallets will be searched. Burrows along the fence line that must be disturbed will be excavated by ABs or approved BMs using hand tools. Tortoise burrows will be mapped using GPS, and the size and age identified. Where flagging would not attract poaching, burrows will also be flagged. All fence construction then will be monitored by BMs. A clearance survey for tortoises will be conducted inside all fenced areas. Consistent with the McCoy Desert Tortoise Translocation Plan (BIO-1[d]), a minimum of two consecutive clearance passes without finding any new tortoises must be completed and these must coincide with heightened tortoise activity from mid-March through May and September through early November, or as otherwise agreed to by BLM and USFWS. This will maximize the probability of finding all tortoises. Clearance transects will be a maximum of 15 feet (5 meters) apart per USFWS approved protocols (USFWS, 2009), except on broad patches of unvegetated, well-developed desert pavement, where the width may be increased to a maximum of 30 feet (9 meters) upon USFWS approval. Once the solar plant site is deemed free of tortoises, heavy equipment will be allowed to enter the site to perform construction activities. It is anticipated that very few tortoises will be found during clearance or monitoring activities, but if tortoises are observed, the biologists will implement the McCoy Desert Tortoise Translocation Plan. The AB and BMs also will conduct clearance surveys of construction areas outside of the solar plant site. Burrows will be avoided if at all possible (especially if this is temporary fencing). However, if a burrow must be destroyed for fencing to occur, then it will be visually and tactilely examined for occupancy by tortoises and other wildlife. If occupancy is negative or cannot be established, the burrow will be carefully excavated with hand tools, using standardized techniques approved by USFWS (2009) and the Desert Tortoise Council (1994), including disinfection techniques for all tools. No burrows that can be avoided will be collapsed during perimeter fence construction. Other tortoise burrows will be flagged judiciously to avoid attraction of tortoise predators or people to the burrow. All BMs, the AB, and relevant construction personnel will be informed of all potential tortoise activity adjacent to an unfenced construction area. Following Project area clearance, a report will be prepared by the Project Lead Biologist to document the clearance surveys, the capture and release locations of all desert tortoises found, post-release monitoring, individual tortoise data, and other relevant data, consistent with the McCoy Desert Tortoise Translocation Plan. This report will be submitted to the BLM and USFWS.

d. ***Desert Tortoise Translocation Plan*:** The Applicant will prepare and implement a Desert Tortoise Translocation Plan that will be approved by USFWS prior to construction.

e. ***Construction Monitoring*:** No construction will occur in unfenced areas (see BIO-1[b], *Desert Tortoise Exclusion Fencing*) or on the linear facilities without BMs present. This includes both the construction phase (construction, revegetation) and maintenance activities during the operations phase that require new surface disturbance. An adequate number of trained and experienced monitors must be present during all construction activities in unfenced areas, depending on the various construction tasks, locations, and season.

f. ***Dead, Injured, and Sick Desert Tortoises*:** The Lead Biologist will notify the BLM and USFWS immediately if a dead or injured desert tortoise is observed. Written notification must be made within 2 days of the date of the finding or incident (if known) and must include: Location of the tortoise, photographs, cause of death (if known), and other pertinent information. The AB will ensure that all tortoises injured by Project activities receive prompt veterinary care at the Applicant’s expense. If an injured animal recovers, the BLM and USFWS will be contacted by the Applicant for final disposition of the animal. However, if efforts to keep the injured animal separate from other tortoises and turtles are successful during the tortoise’s treatment, then it is recommended that it be released at or near its capture point to continue to contribute to the persistence of the local tortoise population. Tortoises fatally injured or killed from Project-related activities will be submitted for necropsy as outlined in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoises (*Gopherus agassizii*) (Berry, 2001) at the Applicant’s expense. Care will be taken by the AB in handling dead specimens to preserve biological material in the best possible state.

BIO-2: General Protection Measures During Construction.

a. ***Biological Resources Mitigation and Monitoring Plan (BRMMP)*:** The BRMMP will outline steps to implement the protection measures; document their implementation; and monitor their effectiveness. The BRMMP will identify the terms and conditions of any permits associated with the Project, including, but not limited to, the USFWS §7 Biological Opinion, CDFG §2081 Incidental Take Permit, and CDFG Streambed Alteration Agreement. The BRMMP will be submitted to the BLM and USFWS for approval prior to the start of ground disturbance.

b. ***Reporting*:** As part of implementing protection measures, regular reports will be submitted to the relevant resource agencies to document the Project activities, mitigation implemented and mitigation effectiveness, and provide recommendations as needed. A schedule of reporting will be specific to individual plans. However, the Lead Biologist will submit monthly reports to the ECM during construction, annual comprehensive reports, and special-incident reports. The Lead Biologist will be responsible for reviewing and signing reports prior to submittal to the agencies. In addition to a regular reporting schedule, all encounters with desert tortoises will be reported to the Lead Biologist, who will report the following information in Monthly and Annual Reports:

1. Location (narrative and maps) and dates of observations;
2. General condition and health, including injuries and state of healing;
3. Diagnostic markings, including identification numbers or markers; and
4. Disposition (if moved).

c. ***Worker Environmental Training*:** The Applicant will prepare and implement site-specific Worker Environmental Training to inform Project personnel about the biological constraints of the Project. The training will be included in the BRMMP and will be developed and presented by a qualified Project biologist prior to the commencement of construction activity. All Project personnel must attend the training. The training will include information regarding the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the Project. Special emphasis will be placed on protection measures developed for the desert tortoise and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation.

d. ***Construction-related Activities*:** Existing roads will be utilized wherever possible to avoid unnecessary impacts. New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area and will minimize surface disturbance in native habitats, where practical. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Along the linear facilities, the anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and/or flagging prior to construction to avoid natural resources, where possible. Outside the Project boundaries, personnel will utilize established roadways (paved or unpaved) for traveling to and from the Project Area, including for transmission line construction. No work in unfenced and uncleared habitat will occur except under the direct supervision of a BM. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Best Management Practices will be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within 2 days of discovery. Additionally, fueling of equipment will take place within existing paved or contained areas and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. All vehicles and equipment will be in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Employees and contractors will look under vehicles and equipment for the presence of desert tortoises prior to movement. No equipment will be moved until the animal has left voluntarily or an AB removes it.

e. ***Construction Speed Limits*:** To minimize the likelihood for vehicle strikes of tortoises and other species during construction, a speed limit of 25 miles per hour will be established for travel on all dirt Project access roads. Signs will be posted at appropriate locations (for example, at Arizona crossings of drainages) to remind drivers to be aware of the potential for desert tortoise and other wildlife occurring on the roadways.

f. ***Ground Excavations*:** The Applicant will ensure that Project features located outside the permanently fenced sites, such as open trenches, pits, bores and other excavations that might trap, entangle, or constitute as pitfalls to desert tortoises and other wildlife, be filled in, fenced, covered, or otherwise modified at the end of each work day so they are no longer a hazard to desert tortoises and other wildlife. All excavations in tortoise habitat outside the permanently fenced sites will be inspected for trapped desert tortoises at the beginning, middle, and end of the work day, at a minimum, but also will be continuously monitored by BMs as part of monitoring construction outside of fenced areas. Should a tortoise become entrapped, the AB will remove it immediately. These Project features will not need to be inspected if they are located within the permanently fenced solar plant site after the clearance surveys have been completed. However, any such Project features inside temporarily fenced locations that have been cleared of tortoises will be inspected daily for other wildlife.

g. ***Construction Material Storage*****:** The Applicant will ensure that any construction pipe, culvert, or similar structure stored less than 8 inches above the ground, stored for one or more nights, and within desert tortoise habitat outside the permanently fenced sites, will be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored on the construction site or placed on pipe racks. These materials will not need to be inspected or capped if they are stored within the permanently fenced solar plant site after the clearance surveys have been completed or inside temporarily fenced locations.

h. ***Hazardous Materials*****:** The Applicant will ensure all vehicles and equipment are in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, fuel, antifreeze, hydraulic fluid, grease, or other hazardous materials. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. Fueling of equipment will take place within existing paved roads, where possible, and not within or adjacent to drainages. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. The ECM, Lead Biologist, and BLM will be informed of any significant hazardous spills within 24 hours.

i. ***Trash Abatement*****:** Trash and food items will be contained in secure, closed lid (raven- and coyote-proof) containers. Trash will be removed regularly (at least once a week) to reduce the attractiveness to the site to opportunistic tortoise predators such as common ravens (*Corvus corax*) and coyotes (*Canis latrans*) and to reduce the possibility of animals ingesting or becoming entangled in foreign matter.

j. ***Roadkill Removal*****:** To preclude providing food to scavengers, including potential tortoise predators, such as ravens and coyotes, all road kills on construction entry roads will be collected, bagged, and put in a secure trash bin, daily. All personnel will be required to report road kills to a BM or AB daily, to ensure timely removal.

k. ***Pets and Firearms*****:** The Applicant will prohibit workers from bringing pets or firearms to the Project.

l. ***Plant and Wildlife Collection*****:** The Applicant will prohibit the intentional killing or collection of all native plant or native wildlife species, including, but not limited to desert tortoise. Workers will not disturb, capture, handle, or move animals, or their nests/burrows. Violations will be reported in the monthly and annual reports.

m. ***Raven Management*****:** The Applicant will provide funds to the USFWS' range-wide raven monitoring and control program to support the more comprehensive goals of that program. These funds will be in lieu of extensive quantitative monitoring at the Project site. The amount will be determined through negotiation with USFWS. In addition, a Raven Management Plan will be designed and implemented to identify the conditions of concern specific to the Project that may attract ravens to the Project and to define a plan that will

1) monitor raven activity and 2) specify management and control measures. The monitoring effort is intended to provide qualitative and semi-quantitative data to ensure that ravens do not pose a threat to desert tortoises from the Project.

n. ***Weed Management Plan*****:** The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area.

o. ***Water Application for Dust Control*****:** The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. A BM will patrol these areas to ensure water does not pool for long periods of time and potentially attract desert tortoises, common ravens, and other wildlife.

p. ***Cleanup and Restoration; Revegetation Plan*****:** The Applicant will ensure that all unused material and equipment will be removed upon completion of construction activities or maintenance activities conducted outside the permanently fenced sites (this includes non-emergency and emergency repairs). Upon completion, all construction equipment and refuse, including, but not limited to wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, metal or plastic containers will be removed from the site and disposed of properly. Any unused or leftover hazardous products will be properly disposed of offsite. The Applicant will prepare and implement a Revegetation Plan to restore temporarily disturbed areas.

BIO-3: Protection Measures During Operation and Maintenance. Road, transmission line, and pipeline maintenance activities are expected to occur during the life of the Project. To the extent possible, major road surface maintenance activities outside the solar plant site will be scheduled for the season with the least desert tortoise activity (typically November 1 through February 28), unless accompanied by an AB. During operation, all personnel who encounter a desert tortoise will immediately report the encounter to the ECM. An AB will monitor all major maintenance activities; minor maintenance (e.g., inspections) does not have to be accompanied by an AB. Only an AB may move tortoises during the operations phase and only if necessary. If feasible, all tortoises will be allowed to move into a safe area of their own accord. In order to prevent roadkills, any tortoise observed on the Project access road will be watched until it is safely off the road before the personnel can continue. If a desert tortoise is found inside the fenced solar plant site, an AB will be contacted immediately to translocate the desert tortoise from the solar plant site; in the interim, the tortoise will be captured, enclosed in a clean cardboard box with a lid, and held in a climate controlled situation until translocation by an AB, in accordance with details described in the McCoy Desert Tortoise Translocation Plan (BIO-1[d]). The ECM or AB will document the location (narrative and maps), date of observations, general condition and health (if known), including injuries and state of healing; diagnostic markings, including identification numbers or markers; and disposition, in the annual report.

BIO-4: Desert Tortoise Compensation. To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant will provide compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat in accordance with the NECO Plan (BLM, 2002). Approximately 4,500 acres of Category 3 habitat would be disturbed). This excludes 38 acres of sand dunes, agricultural areas, and areas that are currently developed or disturbed along the access road. Acreage of disturbance was based on the best available Project plans and would be adjusted, based on pre- and post-construction aerial photography, to reflect the final Project disturbance footprint. Because the construction of Unit 1, Unit 2, and the linear facilities would be phased, compensation obligations (e.g., security deposits and the actual funding or acquisition of mitigation land) should be apportioned as follows:

a. Unit 1: 2,259 acres at a 1:1 ratio;

b. Unit 2: 2,178 acres at a 1:1 ratio; and

c. Linear facilities: 106 acres at a 1:1 ratio.

The following qualitative criteria would be used to select compensation lands to ensure that they provide mitigation for the incidental take of desert tortoises:

a. Compensation lands should be part of a larger block of lands that are either already protected or planned for protection, or feasibly could be protected by a public resource agency or a private biological reserve organization.

b. Parcels should provide habitat that is as good as or better than the habitat being impacted by the Project. Preferably, the lands would comprise sufficiently good habitat that they are either currently occupied or could be occupied by the desert tortoise once they are protected from anthropogenic impacts and/or otherwise enhanced.

c. Parcels should not be subject to such intensive recreational, grazing, or other uses that recovery is rendered unlikely or lengthy. Nor should those invasive species that are likely to jeopardize habitat recovery (e.g., Sahara mustard [*Brassica tournefortii*]) be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration.

d. The parcels should be connected to occupied desert tortoise habitat or in sufficiently close proximity to known occupied tortoise habitat such that an unencumbered genetic flow is possible. Preferably, the existing populations of desert tortoise on these lands would represent populations that are stable, recovering, or likely to recover.

e. The parcels should be consistent with the goals, objectives, and recovery actions of an accepted recovery strategy (e.g., recovery plan) for the desert tortoise if possible.

BIO-5: Protection Measures during Decommissioning/Closure: Project Decommissioning: The planned operating life of the Project is 30 years. In the event the Project permanently shuts down, and no other project will occupy the same industrial space, the Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase. Prior to decommissioning, a plan will be finalized and approved by the BLM. The Applicant shall retain an AB for the decommissioning phase of the Project to ensure that all environmental protection measures are implemented. The Applicant will submit the names and qualifications of all proposed biologists to the USFWS and BLM for review and approval at least 30 days prior to decommissioning activities and prior to initiation of any tortoise handling. Decommissioning activities will not begin until the ABs are approved by the aforementioned agencies.

4.4.3 Alternative 1: Proposed Action

A summary of the overall acreages of disturbance associated with each Alternative is provided in Table 4.4-1. Acreages calculated for impacts were based on the best information available at the time of publication of the PA/FEIS for permanent and temporary disturbance areas. For the gen-tie line and distribution line, temporary disturbances would be associated with string pulling sites and construction around poles. Some vegetation in temporarily disturbed areas (e.g., the string pulling sites) would be crushed by equipment, but these areas would not be otherwise disturbed. Permanent impacts outside of the solar plant site would be caused by transmission pole and tower footprints, permanent access roads, and the 230 kV switchyard. All ground-disturbing activities within the solar plant site are assumed to be permanent in this analysis, including temporary laydown areas that would be converted to solar fields following construction.

TABLE 4.4-1
SUMMARY OF PERMANENT AND TEMPORARY HABITAT DISTURBANCE

Project Component	Project Alternative Disturbance Area (Acres) (Permanent/Temporary)			
	Alternative 1	Alternative 2	Alternative 3 Central Route	Alternative 3 Western Route
Solar Plant Site Unit 1 and Ancillary Facilities	2,259 / 0.0	2,259 / 0.0	--	--
Solar Plant Site Unit 2 and Ancillary Facilities	2,178 / 0.0	--	--	--
Gen-Tie Line, Access Road, and 230 kV Switchyard	53.5 / 50.3	--	94.3 / 0.0	148.7 / 0.0
String Pulling Sites	0.0 / 34.5	--	0.0 / 34.5	0.0 / 34.5
Distribution Line	5.5 / 1.9	5.5 / 1.9	--	--
Total Disturbance Acreage	**4,496 / 86.7**	**2,264.5 / 1.9**	**94.3 / 34.5**	**148.7 / 34.5**

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a; 2011b; Tetra Tech EC, Inc. 2012a, 2012c

Table 4.4-2 summarizes the special-status wildlife species that either have been observed to occur in the study area for the Project or alternatives, or are expected to occur based upon the presence of suitable habitat and known species ranges. Creosote bush scrub and desert dry wash woodlands on the Project site provide habitat for each of the species listed in Table 4.4-2; with the exception of Mojave fringe-toed lizard, which has narrow distribution in areas south of I-10. Also, potential roosting habitat for pallid bat and California leaf-nosed bat is restricted to a single location on the solar plant site. The habitat requirements for each species is described in detail in Section 3.4.

The potential direct and indirect impacts of each action alternative on wildlife are discussed in Sections 4.4.3 to 4.4.5. Direct impacts on wildlife are considered to include injury or death to an individual, habitat loss or degradation, adverse effects on movement, increased predation, and disturbance from noise, light, or dust. Examples of potential indirect impacts include habitat degradation through the introduction of invasive species, or increased predation due to site conditions during the operation and maintenance phase of the Project.

TABLE 4.4-2
POTENTIAL FOR SPECIAL-STATUS WILDLIFE SPECIES TO OCCUR ON THE PROJECT SITE

Species	Project Alternative		
	Alternative 1	**Alternative 2**	**Alternative 3 (Central and Western)**
Reptiles			
Desert tortoise	C	C	C
Mojave fringe-toed lizard	C	C	C
Amphibians			
Couch's spadefoot toad	P	P	P
Birds			
Burrowing owl	C	C	C
Golden eagle	P (foraging only)	P (foraging only)	P (foraging only)
Swainson's hawk	C (non-breeding)	C (non-breeding)	C (non-breeding)
Vaux's swift	C	C	C
Northern harrier	P (foraging only)	P (foraging only)	P (foraging only)
Yellow warbler	C (non-breeding)	C (non-breeding)	P (non-breeding
Prairie falcon	P (foraging only)	P (foraging only)	P (foraging only)
American peregrine falcon	P (foraging only)	P (foraging only)	P (foraging only)
Loggerhead shrike	C	C	C
Le Conte's thrasher	C	P	P
Black-tailed gnatcatcher	C	P	P
California horned lark	C	P	P
Mammals			
Pallid bat	P	P	P
California leaf-nosed bat	P	P	P
American badger	C	P	P
Desert kit fox	C	C	C
Nelson's bighorn sheep	U	U	U
Burro deer	P	P	P

Key to species potential for occurrence: U = Unlikely; P = Potential; C = Confirmed; N/I = No Impact

SOURCE: Tetra Tech EC, Inc. and Karl, 2011a; 2011b; Tetra Tech EC, Inc., 2012b

4.4.3.1 Direct and Indirect Impacts

Construction

Wildlife Habitat

The permanent and temporary removal of habitat under Alternative 1 would have a direct effect on wildlife species through habitat loss (see below for separate discussions of impacts on special-status wildlife species and wildlife movement and breeding). Impacts include the permanent removal of 4,437 acres of habitat on the solar plant site (Table 4.4-1). An additional 59.0 acres of habitat would be permanently impacted and 87 acres temporarily impacted by construction of the gen-tie line, access road, 230 kV switchyard, and distribution line. In addition to disturbance-related impacts, the exclusion fence that would preclude most terrestrial wildlife species from using the solar plant site would encompass approximately 4,437 acres.

Construction of the Project would increase noise, night lighting, and fugitive dust that could disturb common and special-status wildlife species near the construction area. Many species are sensitive to visual and noise disturbances that could cause wildlife to alter foraging and/or breeding behavior and avoid suitable habitat in adjacent areas. Night lighting also could attract wildlife to the site, disrupting their normal pattern of behavior. During construction, nighttime task lighting would be used only as necessary. In addition, implementation of dust control mitigation measures discussed in Section 4.2, *Air Resources*, would reduce impacts associated with dust.

As discussed in Section 4.3, *Biological Resources - Vegetation*, Project construction also has the potential to introduce invasive plant species outside of the Project site, which could result in the degradation of wildlife habitat outside of the solar plant site and linear corridors.

Desert Tortoise

Direct Impacts. Signs of desert tortoise were found throughout the Project solar plant site and within the linear corridors (Figure 3.4-2). The Project would have a direct and permanent impact to 4,437 acres of suitable desert tortoise habitat within the solar plant site fence, including 2,259 for Unit 1 and 2,178 for Unit 2, as well as to 59 acres outside of the solar plant site associated with the gen-tie line, access road, switchyard, and distribution line (Tetra Tech EC, Inc. and Karl, 2011a). Areas south of I-10 are sandier and provide less favorable habitat for tortoises (Tetra Tech EC and Karl, 2011a). Thus, the total area of permanent direct desert tortoise habitat loss in the Project disturbance area is approximately 4,496 acres.

Using the USFWS population estimate methodology, Tetra Tech EC, Inc. and A. Karl (2011a) estimated a desert tortoise population of 3.6 tortoises for the combined solar plant site and linear corridor (range = 0.4 to 31.4). Direct effects could include individual tortoises being crushed or entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers’ or visitors' pets. Desert tortoises also could be attracted to the construction area by application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel would occur from the construction and improvement of access roads, which could disturb, injure, or kill individual tortoises. Also, tortoises could seek shade and thermal cover by taking shelter under parked vehicles and be killed, injured, or harassed when the vehicle is moved.

Indirect Impacts. Foraging opportunities for common raven, kit fox, coyote and other predators would temporarily increase on the Project site during construction. Construction activities are expected to provide food for scavengers and opportunistic feeders. Potential sources of increased predator base include inappropriately discarded food trash, increases in equipment-related wildlife mortality, and the availability of water sources, which tend to draw species that prey on desert tortoise.

Common raven populations in some areas of the Mojave Desert have increased over 1,000 percent from 1968 to 1988 in response to expanding human use of the desert, largely as a result of human-caused land alterations that have increased and stabilized food, water, and nesting site availability to ravens (Boarman, 2002; Boarman and Berry, 1995). Project construction, operation, and maintenance could temporarily increase raven and coyote presence in the Project area.

Ravens capitalize on human encroachment and expand into areas where they previously were absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources, that are introduced or augmented by human encroachment. The City of Blythe and the nearby airport provide food, water features, and roosting/nesting substrates (buildings, signs, lamps, and utility poles) that otherwise would be unavailable. This development near the Project provides year-round water and trash subsidies for the raven as well as nesting opportunities.

It is anticipated that the existing baseline level of wildlife road kills would increase with Project construction and operation traffic, providing an additional food source that could exacerbate the raven/predator attraction and potentially increase predation pressure on desert tortoise. Increased vehicle traffic on access roads during the construction period could also increase the risk of tortoise mortality. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest though tortoises on dirt roads also could be affected depending on vehicle frequency, speed, and driver attentiveness. Additional unauthorized impacts could occur from casual use of access roads due to unauthorized off-road activities.

The capture, handling, and relocation of desert tortoises from the Project site following the installation of perimeter wildlife exclusion fencing could result in the harassment and mortality of juvenile and adult desert tortoises during relocation. Based on 2010 and 2011 field survey findings, local tortoise densities were estimated to be 0.2 adults per square mile, for an estimate of 2 adult tortoises on the Project site. Thus, it is estimated that several juvenile and/or adult tortoises could be relocated from the site prior to construction and would be subject to harassment and possibly death or injury. The proposed desert tortoise translocation area is located immediately west of the solar plant site and has similar habitat to Unit 2, except near at the base of the McCoy Mountains. Substrates there are cobbly and bouldery, with rills and outflows of these larger particles flowing out from the mountain canyons.

Tortoises could die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if they void their bladders. If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens could be spread among the tortoises, both resident and relocated or translocated animals. Relocated tortoises also could be subject to increased risk of predation, increased intraspecific competition, reduced availability of food or water resources, reduced health, exposure to environmental elements, and death. The addition of external site fencing also could present a movement barrier to off-site tortoises that would alter their home range and could separate individuals from the regional tortoise population.

As discussed in Section 4.3, *Biological Resources - Vegetation*, during and following construction, several invasive plant species could colonize disturbed areas within the solar plant site fencing and spread into adjacent vegetation communities, thereby reducing habitat values for native plant and wildlife species. The spread of invasive weeds both within and outside of the Project boundary could result in the degradation of additional habitat for the desert tortoise.

Construction activities are expected to disrupt the desert pavement surface layer and expose fine silt and other erosion-prone soils. This would temporarily increase suspended dust in off-site desert tortoise habitat, particularly during periods of high wind. Increased dust may have adverse effects on the health and survival of individual tortoises. The exposure of desert tortoises to dust suppression chemicals, if used, would have unknown effects on tortoise populations.

Mojave Fringe-toed Lizard

The Mojave fringe-toed lizard has wide distribution in portions of the gen-tie line alignment located south of I-10, with 263 lizards identified in the study area during surveys. This species does not occur on the solar plant site. Direct impacts to Mojave fringe-toed lizards during construction of the gen-tie line, distribution line, and associated access roads would occur due to the permanent loss of 19.0 acres and temporary disturbance to an additional 19.0 acres of undifferentiated sand and sand sheet habitat that is occupied by Mojave fringe-toed lizards, and accidental mortality of lizards from vehicle strikes (see Table 4.3-3). Indirect Project impacts include increased predation on lizards by raptors, ravens, and other birds such as loggerhead shrike; the introduction and spread of exotic vegetation species; fragmentation and degradation of occupied dune habitat; and hazards associated with the spraying of herbicides and dust suppression chemicals within occupied habitat.

Couch's Spadefoot Toad

If present, direct effects to Couch's spadefoot toads would include loss of potential breeding habitat and direct mortality during grading or construction. Indirect impacts could result from hydrology changes that reduce flow to breeding areas. In addition, construction noise could trigger emergence when breeding conditions are not favorable. Potential breeding habitat was detected at seven swales on the gen-tie line and access road route and one location in the southwest portion of the solar plant site, and based on reported sightings along the I-10 corridor to the east and west of the Project site (Dimmit, 1977), and because the Project region is mapped as Couch's spadefoot toad habitat (BLM, 2002), ponds and pools in the study area are considered to provide potentially suitable spadefoot breeding habitat. High-quality breeding habitat was also reported within a borrow pit and graded depression north of I-10 (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). However, species-specific breeding season surveys for this species observed no adults, tadpoles, or eggs in breeding locations in the surveyed area (Tetra Tech EC, Inc., 2012b).

Nesting Birds

The Proposed Action would result in direct and indirect impacts to nesting bird species protected under Fish and Game Code §§3503.5 and 3511, and the Migratory Bird Treaty Act. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the study area. Impacts may occur through the removal of vegetation and/or through vehicle and foot traffic or excessive noise associated with construction. Additionally, night lighting during construction has the potential to affect nesting bird species.

Golden Eagle

The Proposed Action occurs in the breeding range of the golden eagle and is proximate to 5 nesting territories, all of which were inactive in 2011. The closest active nest detected during 2010/2011 surveys is approximately 9.2 miles northeast of the Project in the Big Maria Mountains (Tetra Tech EC, Inc., 2011). The closest inactive nest is greater than 1.5 miles west of the Project in the McCoy Mountains. The Project would not result in direct or indirect impacts to golden eagle nests because of the large distance between active nest sites and the Project site. Due to lack of active nests near the Project and low observed prey densities on the site, golden eagles are expected to forage infrequently in the immediate vicinity of the Project (Tetra Tech EC, Inc., 2011).

Western Burrowing Owl

Within the study area, 14 recently active owl burrows, two burrowing owl pairs, and four individual owls were observed on the solar plant site. Four additional owls were detected in the study area west of the solar plant site boundary. One owl pair and one active burrow also were noted on the gen-tie line and access road route north of I-10 (Tetra Tech EC, Inc. and Karl, 2011a; 2011b). It is anticipated that all identified active burrows on the solar plant site would be removed during Project construction and those on the linear corridor would be avoided where feasible. The entire Project area is considered to provide suitable burrowing owl foraging habitat.

In addition to direct impacts on individual owls and burrows, burrowing owl survival can be indirectly affected by human disturbance and foraging habitat loss even when impacts to individual owls and burrows are avoided. A significant impact to the burrowing owl may occur if there is:

1. Disturbance or harassment within approximately 160 feet of occupied burrows;
2. Destruction of burrows and burrow entrances; and/or
3. Degradation of foraging habitat adjacent to occupied burrows (i.e., an approximately 6.5 acres based on a 300-foot radius around each occupied breeding or resident burrow; CDFG, 1995).

American Badger and Desert Kit Fox

Project construction has the potential to injure or kill American badgers and desert kit foxes by crushing them with construction equipment or by crushing den entrances, which would prevent them from escaping. Following the erection of perimeter fencing around the solar plant site and subsequent wildlife clearance surveys, the perimeter fence would limit badger and kit fox access to the main Project site, and consequently would reduce the likelihood of injury on the site during construction. There is also a low risk that individual animals could be inadvertently injured or killed by vehicles on access roads.

In late 2011, the first known cases of canine distemper virus (CDV) were observed in desert kit foxes about 20 miles west of Blythe on public lands managed by the BLM and leased to Genesis Solar LLC to construct the Genesis Solar Energy Project site. CDFG believes that the outbreak originated from an infected host animal entering the site, possibly a wild or domestic dog, American badger, or other carnivore. The rapid spread of CDV within the kit fox population was facilitated by the project-related displacement of infected animals from the Genesis site into new kit fox territories. Subsequently, desert kit foxes were captured for disease testing at the First Solar Desert Sunlight, Solar Millennium Palen, Genesis Ford Dry Lake, and at Southern California Edison's Colorado River substation and CDV was identified at the two later sites, which span a distance of about 40 miles on the I-10 corridor within the Chuckwalla Valley (CEC, 2012). The CDFG Wildlife Investigations Lab continues to monitor the health of desert kit foxes and is attempting to characterize the spread and significance of the disease on regional kit fox populations. To date, there has been no effort to test desert kit foxes in the Project area for distemper.

The typical practice for solar projects has been to exclude desert kit foxes from project areas during pre-construction clearing of project sites by “passive relocation” methods (i.e., by closing burrows, forcing foxes to locate to new off-site burrows). In the absence of protective measures the Project has the potential to worsen the CDV outbreak by raising kit fox stress levels and causing increased susceptibility to infection, causing increased movement of diseased animals thereby increasing the spread of disease into new areas, or placing healthy kit foxes into contact with off-site infected animals (CEC, 2012).

Nelson’s Bighorn Sheep and Burro Deer

The intermountain valley floor within the solar plant site is unlikely to serve as a potential movement corridor for Nelson’s bighorn sheep based on their documented absence from the McCoy Mountains. Presently, the McCoy Mountains are considered an unoccupied portion of the bighorn’s range. Repopulation in the McCoy Mountains could happen naturally or could happen deliberately via translocation of breeding individuals. The CDFG has successfully re-established bighorn in some ranges in the past. Due to the absence of bighorn sheep from the Project area, the construction phase of the Project would not adversely affect habitat for this species or cause effects to individual sheep or sheep populations.

The Project would not present a complete barrier to movement between mountain ranges as sheep still could disperse around the site to the west, north, and east. Corridors described in the NECO Plan (BLM, 2002) identify potential for bighorn sheep movement from the McCoy Mountains northeast to the Little Maria Mountains and west to the Palen Mountains. Further, the Project site, due to the width of the valley in which the solar facility would be located, has limited value as a movement corridor.

Direct and indirect construction impacts to burro deer include the loss of foraging habitat in desert dry wash woodlands, vegetated swales, and Sonoran creosote bush scrub habitat, and potential barriers to local and regional deer movement. The Project would not present a barrier to regional movement because deer still could disperse around the site to the west, north, and east.

Special-Status Bats

One potential bat roost was identified in Unit 2 of the solar plant site. This roost exhibited a small amount of bat guano, but no current use by bats (Tetra Tech EC, Inc. and Karl, 2011a). This cavity may have been used as a roost by California leaf-nosed bat or pallid bat. All habitats within the solar plant site are suitable for bat foraging; though potential roost sites are limited to the single identified cavity. The Project would avoid this potential bat roost, as it is located in a wash that would be avoided. Direct and indirect impacts to bat species are expected if construction activities were to disrupt nighttime foraging activities.

Operation and Maintenance

Special-Status Amphibians and Reptiles

The presence of employees on the Project site during O&M activities could introduce trash into the area and attract common ravens, coyotes, or other desert tortoise predators. Similarly, the creation of up to 8 acres of netted evaporation ponds could attract predatory species, even if they cannot gain access to the ponds. Increased predation upon desert tortoises would be an indirect Project impact. Similar impacts would be anticipated to Mojave fringe-toed lizard.

Lighting for the Project could disturb special-status wildlife species in adjacent areas. Night lighting would be provided at the O&M building, Unit 1 and Unit 2 substations, site entrance, and switchyard. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required; and all lights would be hooded and directed downward to minimize backscatter and off-site light.

Because potential habitat for Couch’s spadefoot toad would be removed from the solar plant site during construction, O&M impacts to this species are not anticipated. If any off-site breeding habitat is not directly affected during construction, breeding pools or individual toads could be subject to direct impact during O&M activities.

Migratory Birds

Operation and maintenance activities are unlikely to result in direct or indirect impacts to nesting bird species protected under the Migratory Bird Treaty Act and the Fish and Game Code. O&M activities could result in active nests being removed from existing facilities if conflicts are identified (e.g., nest locations create a hazardous situation). There is a low chance that nesting bird disturbance could occur in association with the removal or management of vegetation within the solar plant site or other facilities site, or due to foot or vehicle traffic associated with O&M activities. Additionally, night lighting during O&M activities has the potential to affect nesting bird species.

Golden Eagle

The Project would not result in direct or indirect impacts to golden eagle nest sites during O&M activities because the nearest inactive nest site is greater than 1.5 miles from the Project site, and the nearest active nest is 9 miles from the site. Based on avian point counts and focused golden eagle surveys, foraging use of the study area is considered low (Tetra Tech EC, Inc., 2011).

The Project gen-tie line would be approximately 14.5 miles long, and typical spacing between the 70 to 145-foot-tall monopole or H-frame structures would be approximately 800 to 1,000 feet. The gen-tie line would consist of a high voltage line and fiber optic telecommunication line that would be strung between the structures. The high voltage line could pose an electrocution hazard to perching raptors, including golden eagles, and both lines could pose a collision hazard to birds and possibly bats. Although there is a potential for mortality due to collision with the gen-tie or distribution lines, the potential is low due to the distance from known nests and nesting habitat and the lack of known prey concentrations on the Project site (Tetra Tech EC, Inc., 2011).

The BLM has considered whether development of the MSEP could cause impacts to golden eagles related to the loss of potential foraging habitat. Although it is unknown whether golden eagles that might nest in the McCoy, Little Maria, and Big Maria Mountains in the future would utilize the Project Area for foraging, avian point counts that have been conducted for the Project suggest that golden eagles do not use the area for foraging (see, e.g., Tetra Tech EC, Inc., 2011). Nonetheless, conservatively assuming that they would forage in the Project Area, the Golden Eagle Risk Assessment prepared by Tetra Tech and independently evaluated by the BLM and its NEPA contractor (Appendix C-3), considered the question and has determined that impacts related to the potential Project-related loss of such foraging habitat are likely to be minimal. This is because the area with the requested ROW represents 3 percent of the area within a 10-mile radius of the nearest eagle nest in the McCoy Mountains, which is an inactive nest located 1.7 miles to the west of the Project Area; 3 percent of the area of the next closest nest, which is an inactive nest located 3 miles to the southwest; and 1.5 percent of the area roughly central to the next closest nests, which are located 5.6 miles west-northwest and 8.4 miles northwest, respectively. Additionally, the requested ROW represents 0.4 percent of the area within a 10-mile radius of the active eagle nest in the Big Maria Mountains that was identified during spring 2010 surveys and determined in spring 2011 surveys to be occupied by red-tailed hawks. Furthermore, the habitat that would be disturbed or removed by development of the Project is neither unique nor limiting on the landscape, and does not represent a known prey concentration. Comparable or better foraging opportunities are expected to be available within the surrounding areas. For these reasons, development and operation of the Project is not expected to disturb the foraging of any eagle pairs within 10 miles of the Project site.

Western Burrowing Owl

Operation and maintenance actions have a low likelihood to affect burrowing owls because activities would largely occur within the developed solar plant site. These activities are not expected to remove burrowing owl breeding or foraging habitat, and would occur only on Project access roads and within permanent work areas.

American Badger and Desert Kit Fox

Because new ground disturbance would be minimal during O&M activities, it is unlikely that such activities would injure or kill American badgers or desert kit foxes. A low risk remains that badgers or foxes could be inadvertently injured or killed by vehicles on access roads during O&M activities.

Nelson's Bighorn Sheep and Burro Deer

Once the Project is constructed, noise and human activity are expected to be similar to pre-Project conditions. The Project site is located in an area that receives minimal public use, Therefore, O&M activities are not expected to have any more effect from vehicular use and human activity than what already occurs in the area.

Development and the associated increases in human activities adjacent to and within occupied Nelson's bighorn sheep and burro deer habitat have the potential to adversely affect these species by fragmenting habitat areas if located in close proximity to the base of the McCoy Mountains. If reintroduced to the area, the Project would only have a minor impact on the potential regional connectivity corridor for bighorn sheep because the movement corridor is maintained to the west, north, and east of the solar plant site.

Impacts to burro deer during maintenance and operation include minor barriers to local and regional deer movement; however, the Project would not present a barrier to regional movement because deer still could disperse around the site to the west, north, and east.

Special-Status Bats

Night lighting close to the ground at the Project site and insect populations potentially associated with evaporation ponds could attract bats to the site. There is a low risk that special-status bat could collide with new monopoles, H-frame structures, or lines associated with the gen-tie line and distribution line.

Decommissioning

Decommissioning is anticipated to only directly affect areas that were previously disturbed during installation of Project facilities. Thus, the direct removal of wildlife habitat is not anticipated for decommissioning activities. Potential direct and indirect effects to wildlife populations during decommissioning are similar to those described for the construction phase of the Project and include wildlife disturbance from noise, light, or dust, and the introduction of invasive plant species by various vectors. Revegetation of the site and removal of exclusion fencing would benefit wildlife in the area; however, the restored wildlife access to large expanses of denuded habitat that lack food, water, and cover could subject special-status species such as desert tortoises to mortality hazards long after site decommissioning.

4.4.4 Alternative 2: Reduced Acreage

4.4.4.1 Direct and Indirect Impacts

The types of impacts related to construction, operation and maintenance, and decommissioning on wildlife resources under Alternative 2 would be similar to those described for Alternative 1. The main difference in impacts between Alternative 1 and Alternative 2 is that the solar plant site would be smaller to minimize impacts to areas with higher concentrations of active desert tortoise sign located in Unit 2. Alternative 2 would have a permanent impact on approximately 2,264.5 acres of habitat, including 2,259 acres within the solar plant site fence, and 5.5 acres for the distribution line. As discussed in Section 3.4, substantially less active desert tortoise sign was observed within the footprint of Alternative 2 (i.e., in Unit 1) as compared with Alternative 1 (Figure 3.4-2). As a result, less wildlife habitat would be disturbed under Alternative 2, resulting in fewer direct and indirect impacts on desert tortoise populations.

There is a slight difference in the special-status species that have been observed in Alternative 1 compared to Alternative 2, as summarized in Table 4.4-2. However, all of the same special-status species have the potential to occur in areas for both alternatives. Lastly, impacts to wildlife movement would be reduced as a smaller amount of habitat would be permanently removed. Thus, a greater amount of habitat would be preserved for intermountain and localized, valley floor wildlife movements.

Impacts to the Mule Mountains Multiple-species WHMA for Alternative 2 would be identical to those under Alternative 1, as impacts would be incurred at the switchyard that are common to both alternatives.

The APMs and mitigation measures for Alternative 2 would be the same as those described under Alternative 1, with adjustments to reduce the amount of off-site compensatory habitat needed to mitigate impacts for Alternative 2.

4.4.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.4.5.1 Central Route

Under the Alternative 3 Central Route, construction, operation and maintenance, and decommissioning impacts on wildlife resources would be similar to those described for the Alternative 1 gen-tie line (Eastern Route). The anticipated impacts presented in Table 4.4-1 presume that the Central Route would traverse an approximately 2-mile portion of the adjacent BSPP site that has already been graded and therefore does not contain natural habitat. The Central Route would permanently affect up to 94.3 acres of mostly Sonoran creosote bush scrub habitat. Most impacts would be associated with the construction and maintenance of all-weather access roads to structure locations.

Focused wildlife surveys were not performed by the Applicant for the two alternative gen-tie line routes; however, site-specific analyses performed for the BSPP indicate that wildlife habitat in the alternative gen-tie alignments is comparable to that on the proposed solar plant site. Similar to the Project site, desert tortoise sign on the BSPP site was more common on the western portion of the site near the base of the McCoy Mountains, with relatively less sign identified on the eastern portion of the site (AECOM, 2010a as cited in CEC, 2010). Direct impacts to other special-status wildlife for the Central Route would similar to those described for Alternative 1. The APMs and mitigation measures for Alternative 3 would be the same as those described under Alternative 1.

4.4.5.2 Western Route

Under the Alternative 3 Western Route, construction, operation and maintenance, and decommissioning impacts on wildlife resources would be similar to those described for the Alternative 1 gen-tie line (Eastern Route). However, the Western Route would impact approximately 148.7 acres of mostly Sonoran creosote bush scrub habitat.

Site-specific analyses performed for the BSPP indicate that wildlife habitat in the alternative gen-tie alignments is comparable to that on the solar plant site. Similar to the Project site, desert tortoise sign on the BSPP site was more common on the western portion of the site near the base of the McCoy Mountains, with relatively less sign identified on the eastern portion of the site (AECOM, 2010a as cited in CEC, 2010). Due to the concentration of desert tortoise sign on the western portion of the site, and the incrementally longer length of the portion unique to the Western Route, the Western Route would impact more and relatively higher quality desert tortoise habitat than the Alternative 1 gen-tie line and access road and could impact a greater number of individual tortoises.

Direct impacts to other special-status wildlife for the Western Route would similar to those described for Alternative 1. The APMs and mitigation measures for Alternative 3 would be the same as those described under Alternative 1.

4.4.6 Alternative 4: No Action Alternative

Under this alternative, the Project would not be approved by the BLM. As a result, lands administered by BLM would continue to be managed consistent with current land use designations in the CDCA Plan. The MSEP site is within the Riverside East SEZ as designated in the Solar PEIS ROD. The Solar PEIS ROD amended the CDCA Plan to identify lands within the Riverside East SEZ as suitable for solar energy development; therefore, it is very likely that commercial-scale solar development would be promoted within the ROW application area even if this No Action Alternative were selected. All other uses allowable on CDCA MUC-L lands and on the affected private lands would continue to be available. However, because the configuration, nature, location, resource intensiveness, and other factors related to any future solar energy project are unspecified and uncertain, the BLM cannot predict the potential consequences to wildlife resources that might result from such development, and so finds that particular impacts are too speculative to evaluate meaningfully in this PA/FEIS.

4.4.7 Cumulative Impacts

4.4.7.1 Geographic Scope

The geographic scope for this cumulative impact analysis considers the incremental effects of the analyzed alternatives relative to other past, present, and reasonably foreseeable projects that affect wildlife. For wildlife resources, the geographic scope of analysis is based on species distribution and landforms surrounding the Project site and the natural boundaries of the resource affected, rather than jurisdictional boundaries.

The analysis considers potential effects at different scales for different species, with the analysis generally concentrating on wildlife resources in the Palo Verde watershed and a portion of the Chuckwalla Valley watershed in eastern Riverside County. This scale was used to analyze cumulative effects on Mojave fringe-toed lizard, Couch's spadefoot toad, migratory birds, western burrowing owl, American badger, kit fox, and Nelson's big horn sheep. The geographic scope for assessing cumulative effects to desert tortoise and golden eagle were somewhat larger, as described below.

4.4.7.2 Temporal Scope

In addition to short-term construction impacts, the Project would have ongoing operational impacts on some biological resources. Therefore the temporal scope of the cumulative effects analysis for wildlife includes the construction, operation and maintenance, and decommissioning phases of the Project.

4.4.7.3 Regional Overview

A discussion of regional impacts to vegetation communities and associated wildlife habitat was provided in Section 4.3.7.3, and is not repeated in this section. This section provides a detailed discussion of the effects of past, present, and future projects to wildlife resources in the Project vicinity.

Those areas in eastern Riverside County where existing and cumulative projects occur or are anticipated provide habitat for numerous special-status wildlife species, including desert tortoise, Mojave fringe-toed lizard, Couch's spadefoot toad, golden eagle, burrowing owl, American badger, desert kit fox, and Nelson's bighorn sheep, among others. Tables 4.1-3 and 4.1-4 identify those existing and reasonably foreseeable projects, respectively, in the cumulative effects study area. These include other proposed or approved renewable energy projects, BLM authorized actions or activities, proposed or approved projects within the counties' jurisdictions, and other actions/activities that Lead Agencies consider reasonably foreseeable. Generally, existing and cumulative projects have been sited outside of many sensitive areas that support these species, which include the Joshua Tree DWMA, Chuckwalla DWMA, and other DWMAs. However, substantial wildlife populations occur outside of managed and protected areas and are vulnerable to habitat loss and degradation, or other threats. While the Project is located within the NECO planning area, it is not located within the boundaries of the Chuckwalla DWMA, Joshua Tree DWMA, or Chuckwalla Unit of Critical Habitat for desert tortoise.

Land uses in the cumulative analysis area historically have been altered by human activities, resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. Reasonably foreseeable future projects that could impact biological resources in the cumulative impacts area characterize overall development trends in the Palo Verde Valley and nearby Chuckwalla Valley. Much of the future development in the area is dominated by renewable energy projects. Major renewable projects require extensive access roads and new transmission lines to tie into the existing electrical grid system.

Other projects in the cumulative study area include several transmission lines and nonrenewable energy development, as well as residential and commercial development. In addition to one-time construction impacts, many of the cumulative projects would have ongoing operational impacts on wildlife resources. Therefore, all projects that might contribute impacts over time in the cumulative area are considered for this analysis. This would include nonrenewable energy, transmission lines, wind power, and solar power projects.

General threats to common and special-status wildlife species in the cumulative effects study area include the fragmentation of habitat from roads and urban development, the effects of historic livestock grazing on wildlife forage structure and availability, the effects of military training activities, and agricultural development. In the context of other existing and reasonably foreseeable projects, the proposed Project has the potential to further reduce wildlife habitat and incrementally degrade adjacent habitat. Thus, the Project would contribute to the cumulative loss and degradation of habitat for desert tortoise, Mojave fringe-toed lizard, and other species in the Palo Verde watershed.

Wildlife Habitat

The development of numerous large-scale projects such other solar generation facilities would result in the permanent conversion of wildlife habitat to industrial and commercial uses. Table 4.4-3 presents the estimated area of available wildlife habitat in the cumulative effects study areas, and the cumulative impacts on each species from existing projects and foreseeable future projects. Existing and future impact areas were derived using the list of existing and reasonably foreseeable projects in the Palo Verde Valley and nearby Chuckwalla Valley, as identified in Section 4.1.

The total projected habitat loss in the cumulative study area for wildlife resources includes approximately 3.3 percent of habitat for desert tortoise, 0.2 percent of habitat for Mojave fringe-toed lizard in the Palo Verde Valley, 15.1 percent of foraging habitat for golden eagle, 17.7 percent of habitat for burrowing owl, American badger, and desert kit fox, and less than 0.1 percent of habitat for Nelson's bighorn sheep (Table 4.4-3). Alternatives 1, 2, and 3 would contribute to cumulative impacts on these resources.

However, implementation of Mitigation Measures VEG-7, VEG-8, VEG-9, VEG-12, WIL-1, WIL-2, WIL-4, WIL-5, WIL-6, WIL-7, WIL-8, WIL-9, WIL-10, WIL-12, and WIL-13, would reduce impacts to sensitive wildlife species and their habitat and provide that impacted habitat is adequately mitigated with equivalent habitat that would be protected off-site.

TABLE 4.4-3
SUMMARY OF CUMULATIVE IMPACTS ON WILDLIFE HABITAT

Wildlife Species *Cumulative Study Area*	**Available Habitat in the Cumulative Study Area**	**Impacts to Habitat from Existing Projects (percent of habitat in cumulative study area)**	**Impacts to Habitat from Foreseeable Future Projects (percent of habitat in cumulative study area)**	**Contribution of Alternative 1 to Future Cumulative Impacts (percent of total impacts from future projects)**	**Contribution of Alternative 2 to Future Cumulative Impacts (percent of total impacts from future projects)**	**Contribution of Alternative 3 (Central) to Future Cumulative Impacts (percent of total impacts from future projects**	**Contribution of Alternative 3 (Western) to Future Cumulative Impacts (percent of total impacts from future projects**
Desert tortoise *Eastern Colorado Recovery Unit*	2,600,000 acres	5,540 acres (0.2%)	86,523 acres (3.3%)	4,496 acres (5.2%)	2,318 acres (2.7%)	94 acres (0.1%)	149 acres (0.2%)
Mojave fringe-toed lizard *Occupied sand dune/ sand sheet habitat in the Palo Verde Valley*	12,911 acres	35 acres (0.3%)	76 acres (0.6%)	38 acres (50%)	0.0 acres (0.0%)	38 acres (50%)	38 acres (50%)
Golden eagle *10-mile Project buffer*	398,823 acres	2,998 acres (0.8%)	60,175 acres (15.1%)	4,496 acres (7.5%)	2,318 acres (3.9%)	94 acres (0.2%)	149 acres (0.3%)
Burrowing owl / American badger/ desert kit fox *BLM-identified habitat in the Palo Verde watershed*	286,084 acres	557 acres (0.2%)	50,557 acres (17.7%)	4,496 acres (8.9%)	2,318 acres (4.6%)	94 acres (0.2%)	149 acres (0.3%)
Nelson’s bighorn sheep *All WHMAs in the NECO planning area*	3,821,768 acres	0 acres (0.0%)	753 acres (<0.1%)	0 acres	0 acres	0 acres	0 acres

Desert Tortoise

At the direction of BLM, the cumulative effects study area for desert tortoise considered existing and future projects in the Eastern Colorado Recovery Unit planning area, as defined in the Desert Tortoise Recovery Plan (USFWS, 1994). The Recovery Plan focuses on desert tortoise populations within each of five distinct recovery units, with the fundamental recovery goal of ensuring sufficient population size and stability within an ample amount of protected habitat in each area. The Eastern Colorado Recovery Unit includes the Joshua Tree DWMA and Chuckwalla DWMA, and includes both the Chuckwalla Valley and Palo Verde Valley (Figure 4.4-1). USFWS-designated critical habitat for desert tortoise occurs within the Chuckwalla Unit, which significantly overlaps the Joshua Tree and Chuckwalla DWMAs.

While desert tortoises occur in low densities in the Palo Verde Valley, the Project site is not located within or between lands that are specifically managed for desert tortoise conservation. The Joshua Tree DWMA, Chuckwalla DWMA, and designated critical habitat for desert tortoise are greater than 10 miles west of the Project site and would not be impacted by the Project. A 2.6 million-acre study area was identified for desert tortoise in the Eastern Colorado Recovery Unit, of which approximately 86,523 acres (3.3 percent) would be impacted by future projects (Table 4.4-3). Alternative 1 would contribute approximately 5.2 percent of the total cumulative impact from future projects, affecting about 0.2 percent of available desert tortoise habitat in the recovery unit. Under Alternative 2 the Project would contribute 2.7 percent of the total impact from future projects. The Central Route would contribute 0.1 percent and the Western Route would contribute 0.2 percent of the total impact from future projects. Direct and indirect effects to tortoises and their habitat would be offset through the application of APM BIO-1 through APM BIO-4, and the implementation of Mitigation Measures WIL-1 though WIL-5. The loss of tortoise habitat and direct and indirect effects to this species are anticipated to result in cumulative effects on populations; however, the implementation of the required protection measures that include salvage of desert tortoises, compensatory mitigation, and site restoration following decommissioning would ensure that the loss of tortoise habitat is adequately compensated for and comparable or higher quality habitat would be protected off-site.

Mojave Fringe-toed Lizard

The analysis of cumulative Project effects to Mojave fringe-toed lizard habitat focused on known and CNDDB-documented populations within the Palo Verde Valley. In these areas, populations are dependent upon areas with fine aeolian sand that occur in association with dunes, margins of dry lakes and washes, and isolated sand patches. The cumulative effects analysis identified approximately 12,911 acres of occupied Mojave fringe-toed lizard habitat in the study area, of which approximately 76 acres (0.6 percent) occurs in areas where future projects are proposed (Table 4.4-3). Under Alternatives 1 and 3, approximately 38 acres of habitat would be disturbed for the gen-tie line and associated access road. This represents approximately 0.3 percent of available Mojave fringe-toed lizard habitat that was identified in the cumulative study area and represents a contribution of 50 percent of the total cumulative effect on this resource. The implementation of Mitigation Measures VEG-7, VEG-8, VEG-10, VEG-11, VEG-12, and WIL-10 would minimize impacts to sensitive dune and sand sheet habitat and provide suitable compensatory habitat for habitat losses.

Couch's Spadefoot Toad

Many of the cumulative scenario projects in the Palo Verde Valley are within the described range of the Couch's spadefoot toad; however, this species has patchy and disconnected distribution in the area. Given the unpredictable and somewhat unknown distribution of this species in the regional project area, the cumulative effects of multiple projects on spadefoot populations are not known. Species-specific surveys during breeding season did not observe this species in the study area, and significant impacts were not identified to Couch's spadefoot toad from other projects under the cumulative scenario.

Nesting Birds

Direct impacts to actively breeding birds would be avoided through the implementation of measures that would provide consistency with Fish and Game Code §§3503.5 and 3511, and the Migratory Bird Treaty Act. Under these laws, the removal or disturbance of active nests is prohibited. With implementation of WIL-6 and WIL-7, which require an Avian and Bat Protection Plan and preconstruction nesting bird surveys, the Project would not impact migratory birds other than those that are individually discussed in this PA/FEIS (e.g., burrowing owl). Other future projects would be required to implement similar measures to ensure compliance with federal and state bird protection regulations.

Golden Eagle

The cumulative analysis for golden eagle that was included in the Draft PA/EIS considered the potential for Project impacts to interact with impacts caused by past, present, and reasonably foreseeable future projects within 10 miles of the Project site to cause or contribute to cumulative effects. The 10-mile radius is consistent with USFWS guidance for inventorying golden eagles that occur near a specific project (Pagel et al., 2010). Within this area, the BLM identified 25 past, present and future projects (see Figure 4.4-1 in Section 4.1). Based on a review of known and historic golden eagle breeding sites in the 10-mile golden eagle study buffer, none of the cumulative projects would impact golden eagle breeding sites. However, many of the projects are located or proposed within natural habitat that provides foraging opportunities for golden eagles. A geographic information system (GIS)-based analysis identified 398,823 acres of potentially suitable golden eagle foraging habitat within 10 miles of the Project site. Within that area, future projects would impact 60,175 acres (15.1 percent) of potential foraging habitat, and the Proposed Action and action alternatives would contribute between 0.2 and 7.5 percent of this cumulative impact, as shown in Table 4.4-3. Following USFWS guidance, the loss of potential golden eagle foraging habitat would be considered significant if losses occurred within 1.0 mile of an active nest. However, no active nests are known within 1.0 mile of the Project and few if any nests are known near other projects considered in the cumulative scenario. Few (if any) impacts are anticipated to golden eagle nesting sites generally because this species tends to regionally nest in remote mountainous areas where no active projects are proposed. With the implementation of Mitigation Measure WIL-12, the proposed Project would avoid direct effects to golden eagle.

In its comments on the Draft PA/EIS, USFWS recommended that cumulative impacts to golden eagles be evaluated at the local area population level, which is based on the average natal dispersal distance of the nest or nests under consideration, or 140 miles for golden eagles (Pagel et al., 2010). The area included within a 140-mile radius of the (inactive) nest located farthest from the Project site includes approximately 40,494,295 acres, or 63,272 square miles, and stretches to the north, nearly to Las Vegas; to the south, to the Gulf of California in Mexico; to the east, to Phoenix Arizona; and to the west, to the City of Riverside. Golden eagle helicopter survey data generated in accordance with USFWS guidance (Pagel et al., 2010) is not available for the extent of this area. If it were available, it would be possible to quantify the Project-specific incremental impact relative to cumulative conditions to make a determination as to the NEPA significance of the MSEP's contribution to cumulative effects within the geographic area recommended by USFWS.

In the absence of golden eagle survey data for the recommend 140-mile radius, the BLM has considered MSEP-specific impacts to golden eagles together with the impacts of other projects within the Riverside East Solar Energy Zone (SEZ), as evaluated in the Final Solar PEIS, to provide a larger cumulative context (BLM and DOE, 2012).[1] This is geographically appropriate, since the MSEP site is located within the Riverside East SEZ. Table 9.4.12.1-1 of the Final Solar PEIS (p. 9.4-73) discloses that approximately 3,104,000 acres of potentially suitable golden eagle habitat occurs within the Riverside East SEZ, of which 65,300 acres (2.1 percent) of available potentially suitable foraging habitat would be lost as a result of direct effects of the solar development anticipated within the SEZ, and 244,600 acres (7.9 percent) of such habitat would be affected by indirect effects outside the SEZ.[2] In the Final Solar PEIS, the BLM concluded that a "moderate" overall impact would occur on foraging habitat only. The Final Solar PEIS also states, "The potential degree of indirect effects would decrease with increasing distance from the SEZ" (BLM and DOE, 2012, Table 9.4.12.1-1).

Western Burrowing Owl, American Badger, and Desert Kit Fox

As characterized by the NECO Plan (BLM, 2002), the Palo Verde watershed provides extensive habitat for western burrowing owl, American badger, and desert kit fox. While each species has its own specific habitat requirements, there is considerable overlap in the types of habitat used by these species. The cumulative analysis of effects to these species focused on potential habitat in the Palo Verde watershed, as mapped in the NECO Plan. A GIS-based analysis identified approximately 286,084 acres of potential habitat in the Palo Verde watershed. Future projects would impact approximately 50,557 acres (17.7 percent) of potentially suitable habitat within this area that supports creosote bush scrub and unvegetated desert pavement; with the Proposed Action and action alternatives contributing between approximately 0.2 and 8.9 percent of that total cumulative impact (Table 4.4-3).

The cumulative projects implemented in undeveloped areas would presumably result in impacts to burrowing owl, American badger, and desert kit fox similar to the Project. Such effects include

1 Bureau of Land Management and U.S. Department of Energy (BLM and DOE), 2012. Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States, Volume 2: Arizona and California Proposed Solar Energy Zones Chapters 8 and 9. FES 12-24 • DOE/EIS-0403. Available online: http://solareis.anl.gov/documents/fpeis/Solar_FPEIS_Volume_2.pdf (July).

2 For purposes of the analysis, direct effects within the SEZ consist of the ground-disturbing activities associated with construction and the maintenance of an altered environment associated with operations, and the area of indirect effects was assumed to be the area adjacent to and within 5 miles of the SEZ boundary.

the direct loss of suitable habitat, loss of individual animals, or indirect effects from human presence that result in changes to habitat quality during construction, operation and maintenance, and decommissioning. The implementation of measures identified to protect American badger and desert kit fox (WIL-8) and protect burrowing owls and mitigate habitat losses (WIL-9) would reduce Project impacts.

Nelson's Bighorn Sheep and Burro Deer

As depicted in Figure 3.4-7, the Project is not located with a Nelson's bighorn sheep WHMA and would not result in the loss of habitat for this species within a WHMA. Within the Palo Verde Valley, the Project and the BSPP occur in close proximity to a bighorn sheep WHMA located to the west, in the McCoy Mountains. Should the McCoy Mountains to become occupied by this species at a future time, these two projects are the only identified cumulative actions that would impact potential bighorn sheep movement corridors.

Habitat Connectivity and Wildlife Movement

As discussed above, Project impacts on wildlife movement corridors would be reduced through implementation of APMs and mitigation measures. However, under the cumulative development scenario some residual impacts to wildlife movement are likely to remain even following the application of APMs and mitigation measures. Permanent fencing that is proposed around the MSEP and BSPP projects would create a 5-mile-long wildlife movement barrier that would alter but not likely impede the movement of large wildlife species such as Nelson's bighorn sheep, burro deer, mountain lion, or other highly mobile species. For these wide-ranging species, the Project would not present a barrier to regional movement because animals would still disperse around the site to the west, north, and east. It is anticipated that fencing would pose an impediment to east-west desert tortoise movement near the two project sites; however, such fencing would not impede north-south movement.

The MSEP site does not overlap with any designated Wilderness Areas, ACECs, DWMAs, or WHMAs. In addition, portions of the MSEP site were included in the BLM's draft Solar PEIS recommendations for the Riverside East Solar Energy Study Areas due to the area's low potential for substantial resource conflicts relative to other considered locations. The desert tortoise occurs in low population densities in the Palo Verde Valley, with sparse populations noted at the base of the McCoy Mountains and limited presence east of the MSEP and BSPP sites in association with McCoy Wash (Tetra Tech EC, Inc. and Karl, 2011a; 2011b).

The effects of proposed and future actions on movement of relatively smaller, less mobile species such as desert tortoise are likely to remain even after the application of mitigation measures; however, such impacts would abate for the MSEP and BSPP following Project decommissioning. This cumulative impact is due to the residual effects of habitat fragmentation and impaired east-west movement of the species. It is expected that tortoise habitat located west of the MSEP and BSPP sites at the base of the McCoy Mountains will continue to support tortoise populations and that tortoises will be physically able to circumnavigate the MSEP and BSPP sites to the north and south. Tortoises would not be able to directly traverse the MSEP and BSPP sites; however, the remaining 1-mile-wide movement corridor is of sufficient size that remaining tortoise populations may be sustained and would not be isolated from the regional population. Additionally, habitat on the site would be reconnected to adjacent lands during Project decommissioning and the east-west movement corridor would be restored at that time. With substantial habitat connectivity remaining following the cumulative development scenario, the reduced size of the movement corridor presents an adverse, though not substantial impact to the desert tortoise. Direct and indirect effects to tortoises would be reduced and mitigated through the application of APM BIO-1 through APM BIO-4, and the implementation of Mitigation Measures WIL-1 though WIL-5.

Local Policies or Ordinances Protecting Biological Resources

The Project is not proposed within the boundaries of any adopted habitat conservation plan or natural community conservation plan. The Project site is within the CDCA and is within the planning boundaries of the NECO Plan amendment to the CDCA Plan. The Project was planned and designed in coordination with BLM with the intent of providing consistency with the NECO Plan and CDCA Plan.

4.4.8 Mitigation Measures

The following measures shall be implemented to reduce or avoid wildlife species impacts from construction, operation and maintenance, and decommissioning of the Project. Prior to construction, the following plans required by this section and those required in Section 4.3, *Biological Resources - Vegetation*, will be prepared and submitted to the appropriate agencies for review and approval:

1. Desert Tortoise Relocation/Translocation Plan
2. Raven Monitoring and Control Plan
3. Avian and Bat Protection Plan
4. Burrowing Owl Mitigation Plan
5. Biological Resources Mitigation, Implementation, and Monitoring Plan
6. PAR for Mojave Fringe-toed Lizard compensation

These plans or programs are explained below in more detail.

WIL-1: Measures to Avoid Take of Desert Tortoise. The Applicant shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling, and other procedures shall be consistent with those described in the USFWS (2009) *Desert Tortoise Field Manual* or more current guidance provided by CDFG and USFWS. The Applicant shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. The Applicant shall implement the following measures:

1. ***Desert Tortoise Exclusion Fence Installation.*** To avoid impacts to desert tortoises, permanent exclusion fencing shall be installed along the permanent perimeter security fence (boundaries) as phases are constructed. Temporary fencing shall be installed along linear features or any subset of the plant site phasing that does not correspond to permanent perimeter fencing. All fencing installation corridors shall be flagged to assist biologists in studying the fence route and surveyed within 24 hours prior to the initiation of fence

construction. Clearance surveys of the desert tortoise exclusionary fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques outlined in the USFWS' 2009 *Desert Tortoise Field Manual* and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision. These fence clearance surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. Disturbance associated with desert tortoise exclusionary fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the Applicant shall provide to the BLM Authorized Officer (BLM AO), CDFG, and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled by the Designated Biologist(s) in accordance with the *Desert Tortoise Field Manual*.

a. *Timing, Supervision of Fence Installation*. The exclusion fencing shall be installed in any area subject to disturbance prior to the onset of site clearing and grubbing in that area. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. *Fence Material and Installation*. All desert tortoise exclusionary fencing shall be constructed in accordance with the USFWS' *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence).

c. *Security Gates*. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time.

d. *Fence Inspections*. Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing in the utility corridors, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the Project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

2. ***Desert Tortoise Clearance Surveys within the Plant Site.*** Clearance surveys shall be conducted in accordance with the final USFWS-approved *Desert Tortoise Translocation Plan, McCoy Solar Energy Project* (Appendix F in the Biological Assessment; TetraTech EC Inc., 2012a) and shall consist of two surveys covering 100 percent the Project area by

walking transects no more than 15 feet apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction or parallel but offset to allow opposing angles of observation. Clearance surveys for non-linear areas of Phase 1A may be conducted outside the active season. Clearance surveys of the remaining portions of the power plant site may only be conducted when tortoises are most active in the Project vicinity (March through May or September through mid-November). Clearance surveys of linear features may be conducted during anytime of the year. Surveys outside of the active season in areas other than Phase 1A require approval by USFWS and CDFG. Any tortoise located during clearance surveys of the power plant site and linear features shall be relocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan:

a. *Burrow Searches*. During clearance surveys all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the *Desert Tortoise Field Manual*. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined, but only on the last survey pass and if not occupied by other wildlife. Tortoises taken from burrows and from elsewhere on the power plant site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

b. *Burrow Excavation/Handling*. All potential desert tortoise burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the *Desert Tortoise Field Manual*.

c. *Monitoring Following Clearing*. Following the desert tortoise clearance and removal from the power plant site and utility corridors, workers and heavy equipment shall be allowed to enter the Project site to perform clearing, grubbing, leveling, and trenching. A Designated Biologist shall directly monitor site clearing and shall be on-site during grading activities to find and move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

3. ***Reporting***. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within Project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan (Mitigation Measure WIL-2).

WIL-2: Desert Tortoise Relocation/Translocation Plan. The Applicant shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of the BLM AO. The Plan shall include guidance during different phases of Project construction and shall include measures to minimize the potential for repeated translocations of individual desert tortoises. The final Plan shall include all revisions deemed necessary by BLM, USFWS, and CDFG.

WIL-3: Project Notifications and Reporting. The Applicant shall provide BLM staff with reasonable access to the Project site and compensation lands under the control of the Applicant and shall otherwise fully cooperate with BLM's efforts to verify the Project owner's compliance with, or the effectiveness of, mitigation measures. The Designated Biologist shall do all of the following:

1. ***Notification*.** Notify the BLM AO at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify the BLM AO in writing if the Applicant is not in compliance with any required conditions of project approval, including but not limited to any actual or anticipated failure to implement mitigation measures within the specified time periods;

2. ***Monitoring During Grubbing and Grading*.** Remain onsite daily while vegetation salvage, grubbing, grading and other ground-disturbance construction activities are taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.

3. ***Monthly Compliance Inspections*.** Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the BLM AO, USFWS, and CDFG during construction.

4. ***Notification of Injured, Dead, or Relocated Listed Species*.** In the event of a sighting in an active construction area (e.g., with equipment, vehicles, or workers), injury, kill, or relocation of any listed species, the BLM AO, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

    a. *Injured Desert Tortoise*. If a desert tortoise is injured as a result of Project-related activities during construction, the Designated Biologist shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the Applicant. Following phone notification as required above, the BLM AO, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken.

    b. *Desert Tortoise Fatality*. If a desert tortoise is killed by Project-related activities during construction or operation, submit a written report with the same information as an injury report. These desert tortoises shall be salvaged according to guidelines described in the USGS publication *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise*. The Applicant shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

5. ***Stop Work Order*.** The BLM AO may issue the Applicant a written stop work order to suspend any activity related to the construction or operation of the Project to prevent or remedy a violation of one or more required conditions of project approval (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or

to prevent the illegal take of an endangered, threatened, or candidate species. The Applicant shall comply with the stop work order immediately upon receipt thereof.

WIL-4: Compensatory Mitigation for Desert Tortoise Habitat Losses. To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant shall provide compensatory mitigation at a 1:1 ratio for impacts to 4,500 acres, adjusted to reflect the final footprint of the selected Project alternative. For the purposes of this measure, the Project footprint means all lands directly disturbed in the construction and operation of the Project, including all linear features, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. To satisfy this measure, the Applicant shall acquire, protect and transfer 1 acre of desert tortoise habitat for every acre of habitat within the final Project footprint, and provide associated funding for the acquired lands, as specified below. Mitigation Measure WIL-15 may provide the Applicant with another option for satisfying some or all of the requirements in this measure. In lieu of acquiring lands itself, the Applicant may satisfy the requirements of this measure by depositing funds into the REAT Account established with the NFWF, as provided below in section 3.h. of this measure.

The timing of the mitigation shall correspond with the timing of the site disturbance activities. However, if security is posted in accordance with 3.g. below (Mitigation Security), the Applicant shall acquire the land, in fee or in easement, no more than 18 months after the start of Project ground-disturbing activities. If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. ***Selection Criteria for Compensation Lands.*** The compensation lands selected for acquisition in fee title or in easement shall:

   a. be within the Colorado Desert Recovery Unit;

   b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

   c. be prioritized near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

   d. be connected to lands with desert tortoise habitat equal to or better quality than the Project site, ideally with populations that are stable, recovering, or likely to recover;

   e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;

   f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

   g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

   h. have water and mineral rights included as part of the acquisition, unless the BLM AO, in consultation with CDFG and USFWS, agrees in writing to the acceptability of land.

2. ***Review and Approval of Compensation Lands Prior to Acquisition.*** The Applicant shall submit a formal acquisition proposal to the BLM AO, CDFG, and USFWS describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the BLM AO and CDFG, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels.

3. ***Compensation Lands Acquisition Requirements.*** The Applicant shall comply with the following requirements relating to acquisition of the compensation lands after the BLM AO and CDFG, in consultation with BLM and the USFWS, have approved the proposed compensation lands:

    a. *Preliminary Report*. The Applicant, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM AO and CDFG. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM AO and CDFG, in consultation with the USFWS. For conveyances to the state, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board.

    b. *Title/Conveyance*. The Applicant shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the BLM AO and CDFG. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code §65965), or to BLM under terms approved by the BLM AO and CDFG. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary.

    c. *Initial Habitat Improvement Fund*. The Applicant shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code §65965) and if it meets the approval of CDFG and the BLM AO. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

    d. *Property Analysis Record*. Upon identification of the compensation lands, the Applicant shall conduct a PAR or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands.

    e. *Long-term Maintenance and Management Fund*. The Applicant shall deposit in NFWF's REAT Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR analysis conducted for the compensation lands.

        The BLM AO, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

f. *Interest, Principal, and Pooling of Funds*. The Applicant, the BLM AO and CDFG shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

i. Interest. Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.

ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG.

iii. Pooling Long-Term Maintenance and Management Fee Funds. CDFG, or a BLM AO- and CDFG-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFG and BLM AO.

iv. Other expenses. In addition to the costs listed above, the Applicant shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs, expenses incurred from other state agency reviews, and overhead related to providing compensation lands to CDFG or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

g. *Mitigation Security*. The Applicant shall provide financial assurances to the BLM AO and CDFG with copies of the document(s) to the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described herein. These funds shall be used solely for implementation of the measures associated with the Project in the event the Applicant fails to comply with the requirements specified in this measure, or shall be returned to the Applicant upon successful compliance with the requirements in this measure. The BLM AO's or CDFG's use of the security to implement required measures may not fully satisfy the Applicant's obligations under this condition. Financial assurance can be provided to the BLM AO and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the BLM AO, the Applicant shall obtain the BLM AO's and CDFG's approval, in consultation with the USFWS, of the form of the Security. Security shall be provided in the amounts calculated as follows:

i. land acquisition costs for compensation land, calculated at $500/acre.

ii. initial protection and improvement activities on the compensation land, calculated at $330/acre.

iii. Long term maintenance and management fee, calculated at $1,450 an acre.

The amount of security shall be adjusted for any change in the Project footprints for each phase as described above.

h. The Applicant may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the security required in 3.g., above, and may be provided in lieu of security. If this option is used for the acquisition and initial improvement, the Applicant shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than $500 an acre, the excess money deposited in the REAT Account shall be returned to the Applicant. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the Applicant.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM AO and CDFG. Such delegation shall be subject to approval by the BLM AO and CDFG, in consultation with the USFWS, prior to land acquisition, initial protection or maintenance and management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be implemented with 18 months of the BLM's approval.

WIL-5: Raven Monitoring and Control Plan. The Applicant shall implement a Raven Monitoring and Control Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the BLM AO in consultation with USFWS and CDFG. A raven management plan included in the Applicant's BA to BLM shall provide the basis for the final plan, subject to review, revisions and approval from the BLM AO, CDFG, and USFWS. The management plan shall include but not be limited to a program to monitor raven presence in the Project vicinity, determine if raven numbers are increasing, and to implement raven control measures as needed based on monitoring results. The purpose of the plan is to avoid any Project-related increases in raven numbers during construction, operation, and decommissioning. The Applicant shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below.

1. The Raven Plan shall:

a. Identify conditions associated with the Project that might provide raven subsidies or attractants;

b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;

c. Describe control practices for ravens;

d. Establish thresholds that would trigger implementation of control practices;

e. Address monitoring and nest removal during construction and for the life of the Project, and;

f. Discuss reporting requirements.

2. ***USFWS Regional Raven Management Program*:** The Applicant shall submit payment to the project sub-account of the REAT Account held by NFWF to support the USFWS Regional Raven Management Program. The one-time fee shall be as described in the cost allocation methodology or more current guidance as provided by USFWS or CDFG.

WIL-6: Avian and Bat Protection Plan. The Applicant shall prepare and implement an Avian and Bat Protection Plan (sometimes referred to as "Bird and Bat Conservation Strategies") to monitor the death and injury of birds and bats from collisions with facility features such as transmission lines and tower structures (e.g., meteorological towers). The monitoring data shall be used to inform an adaptive management program that would avoid and minimize Project-related avian and bat impacts. The study design shall be approved by the BLM AO in consultation with CDFG and USFWS, and shall be incorporated into the Project's Biological Resources Mitigation, Implementation, and Monitoring Plan (BRMIMP; see Mitigation Measure VEG-2) and implemented.

The applicant shall follow APLIC guidelines for avian protection on powerlines and shall use current guidelines to reduce bird mortality from collision and electrocution with powerlines. The APLIC (2006) and USFWS recommend the following:

1. Provide 60-inch minimum horizontal separation between energized conductors or energized conductors and grounded hardware;

2. Insulate hardware or conductors against simultaneous contact if adequate spacing is not possible;

3. Use structure designs that minimize impacts to birds; and

4. Shield wires to minimize the effects from bird collisions.

WIL-7: Pre-construction Nest Surveys. Pre-construction nest surveys shall be conducted if construction activities would begin from February 1 through July 31. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). The goal of the nesting surveys shall be to identify the general location of the nest sites, sufficient to establish a protective buffer zone around the potential nest site, and need not include identification of the precise nest locations. Surveyors performing nest surveys shall not concurrently be conducting desert tortoise surveys. The bird surveyors shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat areas that could be disturbed by each phase of construction. Surveys shall also include areas within 500 feet of the boundaries of the active construction areas (including linear facilities);

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within a 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of

construction inactivity exceed 3 weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

3. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the BLM AO; and

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

WIL-8: American Badger and Desert Kit Fox Protection. To avoid direct impacts to American badgers and desert kit fox, the Applicant shall implement the following measures:

1. ***Baseline Kit Fox Census and Population Health Survey:*** A qualified mammalogist shall complete a baseline study of desert kit fox populations on the Project site and the anticipated relocation/receiving area(s) at least 60 days prior to initiation of construction activities. The study shall characterize the demographics (e.g., size, structure, and distribution) of the kit fox population on the site and receiving areas. Pending CDFG approval, the baseline survey shall include a testing component in which the researchers trap and test a representative subsample of the population for canine distemper, and generally describe animal health on the site and receiving areas. The baseline kit fox census and health findings shall be summarized in a report that informs will be used to inform site management of kit foxes during preconstruction surveys. Alternately, the Applicant may coordinate with and fund studies by federal or State wildlife health officials (e.g., the CDFG Wildlife Investigations Lab) to establish baseline health conditions.

2. ***Prepare Desert Kit Fox Management Plan*:** At least 45 days prior to construction, the Applicant shall prepare a Desert Kit Fox Management Plan that: 1) incorporates baseline desert kit fox census and health survey findings into a cohesive management strategy that minimizes disease risk to kit fox populations; 2) provides a program for tagging, radio-tracking and monitoring of a subset of displaced kit foxes during the construction phase to understand how displacement affects regional kit fox populations; 3) specifically identifies preconstruction survey methods for kit foxes and large carnivores (e.g., badgers) in the Project area; 4) describes preconstruction and construction-phase relocation methods from the site, including the possibility for passive and active relocation from the site (and outlines identified CDFG permit and MOU requirements for active relocation), and; 5) coordinates survey findings prior to and during construction to meet the information needs of wildlife health officials in monitoring the health of kit fox populations. The Plan shall include contingency measures that would be performed if canine distemper were documented in the Project area or in potential relocation areas, and measures to address potential kit fox reoccupancy of the site (as documented at the Genesis site). The contents and requirements of the Plan shall be subject to review and approval by the BLM AO in consultation with USFWS and CDFG.

3. ***Implement Desert Kit Fox Management Plan:*** If canine distemper is not identified in the Project area or relocation areas during baseline surveys, the mitigation strategy may utilize passive means or active means with appropriate CDFG authorization to relocate kit foxes from the site. The approach below assumes that canine distemper is not detected during baseline surveys.

a. *Pre-Construction Surveys:* Biological Monitors shall conduct pre-construction surveys for desert kit fox and American badger no more than 30 days prior to initiation of construction activities. Surveys shall also consider the potential presence of active dens within 100 feet of the project boundary (including utility corridors and access roads) and shall be performed for each phase of construction. If dens are detected each den shall be classified as inactive, potentially active, or definitely active.

b. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.

c. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.

d. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.

e. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. BLM approval may be required prior to release of badgers on public lands.

f. If an active natal den (a den with pups) is detected on the site, the BLM AO and CDFG shall be contacted within 24 hours to determine the appropriate course of action to minimize the potential for animal harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g., is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around all active dens.

g. The following measures are required to reduce the likelihood of distemper transmission:

   i. No pets shall be allowed on the site prior to or during construction, with the possible exception of kit fox scat detection dogs during preconstruction surveys, and then only with prior CDFG approval;

   ii. Any kit fox hazing activities that include the use of animal repellents such as coyote urine must be cleared through CDFG prior to use, and;

   iii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to CDFG and the BLM AO within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until CDFG determines if the collection of necropsy samples is justified.

WIL-9: Burrowing Owl Protection and Mitigation. The Applicant shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

1. ***Pre-Construction Surveys*****:** The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of construction activities. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted from two hours before sunset to one hour after or from one hour before to two hours after sunrise. The survey area shall include the Project Disturbance

Area and surrounding 500-foot survey buffer for each phase of construction in accordance with VEG-13 (*Phasing*).

2. ***Implement Burrowing Owl Mitigation Plan*:** The Applicant shall prepare and implement a final Burrowing Owl Mitigation Plan. The Plan shall be approved by the BLM AO in consultation with USFWS and CDFG, and shall:

    a. identify suitable sites as close as possible to the Project site, and within 1 mile of the Project Disturbance Areas for creation or enhancement of burrows prior to passive relocation efforts;

    b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl;

    c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the Project disturbance area; and

    d. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owls were relocated from and provide a reporting plan.

    e. include the following elements related to artificial burrow relocation:

        i. A brief description of the project and project site pre-construction;

        ii. The mitigation measures that will be implemented;

        iii. Potential conflicting site uses or encumbrances;

        iv. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);

        v. Artificial burrow(s) proximity to the project activities, roads and drainages;

        vi. Artificial burrow(s) proximity to other burrows and entrance exposure; Photographs of the site of the occupied burrow(s) and the artificial burrows;

        vii. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;

        viii. A brief description of the artificial burrow design;

        ix. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.

        x. A description of the frequency and type of burrow maintenance

    f. address the following elements related to the exclusion plan:

        i. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species by use of a fiber-optic endoscope or comparable device;

        ii. Describe the type of scope and appropriate timing of scoping to avoid impacts;

        iii. Describe occupancy factors to look for and what will guide determination of vacancy and excavation timing (e.g., one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape);

        iv. Identify how the burrow(s) will be excavated (excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);

v. Describe removal of other potential owl burrow surrogates or refugia on site; Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

vi. Describe required monitoring of the exclusion site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;

vii. Identify how the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

3. ***Implement Avoidance Measures*****:** If an active burrowing owl burrow is detected within 500 feet from the Project disturbance area the following avoidance and minimization measures shall be implemented:

   a. *Establish Non-Disturbance Buffer*: Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

   b. *Monitoring*: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 to August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

4. ***Acquire Compensatory Burrowing Owl Habitat*****:** Consistent with CDFG mitigation guidance (CBOC, 1993), the Applicant shall acquire, in fee or in easement, at least 45 acres of land suitable to support a resident population of burrowing owls and shall provide funding for the enhancement and long-term management of these compensation lands (based on three owl pairs and four unpaired owls observed during focused surveys and 6.5 acres per pair or individual bird; to be adjusted based on final survey findings). The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the BLM AO, in consultation with CDFG prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.

   a. *Criteria for Burrowing Owl Mitigation Lands*: The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4 [Desert Tortoise Compensatory Mitigation], with the additional criteria to include: 1) the 45 acres of mitigation land must provide suitable habitat for burrowing owls, and 2) the acquisition lands must either currently support burrowing owls or be no farther than 5 miles from an active burrowing owl nesting territory. The 45 acres of burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met. If the 45 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the Applicant shall fulfill the requirements described below in this measure.

b. *Security*: If the 19.5 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the Applicant or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition (see the verification section at the end of this measure). Alternatively, financial assurance can be provided by the Applicant to the BLM AO and CDFG, according to the measures outlined in Mitigation Measure WIL-4. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account, or another form of security ("Security") prior to initiating ground-disturbing Project activities. Prior to submittal, the Security shall be approved by the BLM AO in consultation with CDFG and the USFWS to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in Mitigation Measure WIL-4.

WIL-10: Compensatory Mitigation for Mojave Fringe-toed Lizard Habitat Losses. To mitigate for permanent habitat loss and direct impacts to Mojave fringe-toed lizards the Applicant shall provide compensatory mitigation at a 3:1 ratio, which may include compensation lands purchased in fee or in easement in whole or in part, for impacts to stabilized or partially stabilized desert dune habitat (19 acres x 3 = 57.0 acres); or the three times (3X) the acreage of sand dune/partially stabilized sand dune habitat permanently impacted by the final Project footprint, whichever is greater). If compensation lands are acquired, the Applicant shall provide funding for the acquisition in fee title or in easement, initial habitat improvements and long-term maintenance and management of the compensation lands.

1. ***Criteria for Compensation Lands*:** The compensation lands selected for acquisition shall:

a. Be sand dune or partially stabilized sand dune habitat within the McCoy Valley or Chuckwalla Valley with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;

b. To the extent feasible, be connected to lands currently occupied by Mojave fringe-toed lizard;

c. To the extent feasible, be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

d. Provide quality habitat for Mojave fringe-toed lizard, that has the capacity to regenerate naturally when disturbances are removed;

e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;

f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

g. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat;

h. Not be subject to property constraints (i.e. mineral leases, cultural resources); and

i. Be on land for which long-term management is feasible.

2. ***Security for Implementation of Mitigation*****:** The Applicant shall provide financial assurances to the BLM AO to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this measure. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO according to the measures outlined in Mitigation Measure WIL-4. The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in Mitigation Measure WIL-4.

3. ***Preparation of Management Plan*****:** The Applicant shall submit to the BLM AO, CDFG and USFWS a draft Management Plan that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.

WIL-11: [Removed from PA/FEIS]

WIL-12. Measures to Minimize Impacts to Golden Eagles. The Applicant shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles during initial Project construction and again prior to Project decommissioning.

1. ***Annual Inventory During Construction*****:** For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within one mile of the Project boundaries. Survey methods for the inventory shall be as described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al., 2010) or more current guidance from the USFWS.

2. ***Inventory Data*****:** Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.

3. ***Determination of Unoccupied Territory Status*****:** A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least 2 full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.

4. ***Monitoring and Adaptive Management Plan*****:** If an occupied nest[3] is detected within 1 mile of the Project boundaries, the Applicant shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al., 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense), increased vigilance behavior at nest sites, changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

WIL-13: Measures to Minimize Wildlife Impacts from Evaporation Ponds. The Applicant shall cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting with mesh sizes other than 1.5 inches may be installed if approved by the BLM AO in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the pond shall be designed such that the netting shall never contact the water. Monitoring of the evaporation ponds shall include the following:

1. ***Monthly Monitoring*****:** The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. The monthly surveys shall be conducted in 1 day for a minimum of 2 hours following sunrise (i.e., dawn), a minimum of 1 hour mid-day (i.e., 11:00 to 13:00), and a minimum of 2 hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the Project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the BLM AO, CDFG, and USFWS.

2. ***Dead or Entangled Birds*****:** If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking

[3] An occupied nest is one used for breeding by a pair of golden eagles in the current year. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or current years' mutes (whitewash) also indicate site occupancy. Additionally, all breeding sites within a breeding territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site is considered occupied throughout the periods of initial courtship and pair-bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

3. ***Quarterly Monitoring*****:** If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected at the evaporation ponds by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.

4. ***Biannual Monitoring*****:** If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the BLM AO, USFWS and CDFG, future surveys may be reduced to two surveys per year, during the spring nesting season and during fall migration. If approved by the BLM AO, USFWS and CDFG, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.

5. ***Modification of Monitoring Program*****:** Without respect to the above requirements the Applicant, CDFG or USFWS may submit to the BLM AO a request for modifications to the evaporation pond monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. Modifications to the evaporation pond monitoring described above and implementation of adaptive management measures shall be made only after approval from the BLM AO, in consultation with USFWS and CDFG.

WIL-14: [Removed from PA/FEIS]

WIL-15: In-Lieu Fees to Satisfy Compensation Requirements. The Applicant may choose to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands, pursuant to California Fish and Game Code §§2069 and 2099 or any other applicable in-lieu fee provision, to the extent the in-lieu fee provision is found by the Fish and Game Commission to mitigate the impacts identified herein.

4.4.9 Residual Impacts after Mitigation Incorporated

The Proposed Action and the two action alternatives would have substantial impacts to desert tortoise, and possibly to Mojave fringe-toed lizard, burrowing owl, and other nesting birds and desert kit fox, which may occur on site. Relatively lesser impacts to American badger and bat species would be anticipated. As discussed in the sections above, the recommended avoidance and minimization measures as well as compensatory mitigation would effectively offset direct, indirect, and cumulative impacts to wildlife resources and assure compliance with state and federal laws. It is expected that very limited residual adverse effects would remain after mitigation measures have been applied.

4.5 Cultural Resources

4.5.1 Methodology for Analysis

4.5.1.1 Introduction

Evaluation of potential impacts of the Proposed Action and alternatives on cultural resources is based in part on review of legal responsibilities established under NEPA, the NHPA (42 USC §§4321, 4331-4335), and other relevant authorities. To carry out NEPA, the federal government has a "continuing responsibility… to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may… preserve important historic, cultural, and natural aspects of our national heritage…." (42 USC §4331(b)(4)). NEPA requires the federal agency to take a "hard look" at the impacts on cultural resources associated with a proposed action and alternatives. The analysis takes into account direct, indirect, and cumulative effects.

For purposes of NEPA, this PA/FEIS includes information gathered as part of the NHPA §106 process about historic properties and the potential effects to such properties from the proposed undertakings, i.e., the BLM's decision whether or not to issue the requested ROW grant or approve a CDCA Plan Amendment. Section 106 of the NHPA requires that the agency take into account the effects of undertakings on historic properties, defined as any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP; and to afford the ACHP a reasonable opportunity to comment. The steps of the §106 process are: (1) identification of historic properties within the APE for the proposed undertaking; (2) assessment of the proposed undertaking's potential effects on identified properties; and (3) resolution of any adverse effects. Each step requires consultation with the SHPO, interested Indian tribes, local governments, and other identified consulting parties.

Area of Potential Effects

The regulations implementing NHPA §106 define the APE as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR §800.16(d)). In addition, the APE may be buffered for purposes of cultural resources inventory to facilitate the identification of resources that may be located in proximity to the APE and indirectly affected by a proposed project or to allow for redesign of project components to avoid direct effects to cultural resources. The APE for the Project has been defined as:

1. For direct effects, the APE is defined as all areas where physical Project activities would occur, including the full extent of all Project components and alternatives. This consists of the area included within the ROW grant for the solar energy generating plant and associated facilities, roads, and transmission lines.

2. For indirect effects, the APE is defined as a 0.5-mile buffer beyond the ROW grant, to take into consideration resources whose settings could be adversely affected by the proposed Project development.

The current APE is illustrated on Figure 4.5-1.

4.5.1.2 Cultural Resources Evaluation of Historical Significance and Effects

A key part of any cultural resources analysis under NEPA and NHPA §106 is to determine whether the cultural resources located within the Project APE are historically significant. Subsequent effects assessments are made for those cultural resources that are determined to be historically significant. Cultural resources that can be avoided by construction may remain unevaluated if the values they possess are only informational in nature.

Evaluation of Historical Significance

NHPA §106

Effects on historic properties are considered during federal undertakings chiefly under NHPA §106 through its implementing regulations, 36 CFR Part 800. This includes consideration of effects on properties of traditional religious and cultural significance to Indian tribes. The §106 process requires federal agencies to consider the effects of their undertakings on any historic district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP and to afford the ACHP a reasonable opportunity to comment on such undertakings, 36 CFR §800.1(a).

The BLM has made NRHP determinations of eligibility and findings of effect for all cultural resources within the APE and has requested SHPO concurrence with those determinations and findings. Two previously recorded prehistoric archaeological sites (CA-RIV-2486 and CA-RIV-3419) had been previously evaluated and determined eligible for the NRHP, and BLM concurs with the previous determinations. Seven newly recorded archaeological sites, including one prehistoric site (CA-RIV-10222) and six historic DTC/C-AMA sites (CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246), have been evaluated and determined eligible for the NRHP. The single built environment resource within the APE, a buried water pipeline, was previously determined eligible for the NRHP as a contributing element to the Blythe Army Air Base, portions of which have been determined eligible for the NRHP. Eighty-seven archaeological and historic resources have been determined not eligible for the NRHP. Five resources have not yet been evaluated. The BLM's determinations of eligibility are shown in Appendix D, Table 4.

A MOA is being developed for this Project for the purpose of resolving adverse effects to seven historic properties. The MOA is being developed by the BLM in consultation with the ACHP, SHPO, the Applicant, Riverside County, interested Indian tribes, and any other consulting parties. The MOA will describe the adverse effects to the seven historic properties, will include measures to resolve the adverse effects, and must be executed prior to the BLM's issuance of the ROD. Specific measures to resolve adverse effects will be developed in a Historic Properties Treatment Plan (HPTP) and included as an attachment to the MOA. Execution of the MOA will conclude the §106 process. The BLM's findings of effect for all resources are shown in Appendix D, Table 5.

NEPA

NEPA establishes national policy for the protection and enhancement of the environment. Part of the function of the federal government in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage." Cultural resources need not be determined eligible for the NRHP as stated in the NHPA to receive consideration under NEPA. NEPA is implemented by CEQ, 40 CFR §§1500-1508. NEPA provides for public participation in the consideration of cultural resources issues, among others, during agency decision-making.

Assessing Effects to Historic Properties

BLM is using the definition of adverse effect in the §106 regulations to assess impacts of the proposed or alternative action for those cultural resources that BLM has identified as historic properties eligible for or listed in the NRHP. The §106 regulations describe an adverse effect as an effect "found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the [NRHP] in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."[1] (36 CFR §800.5(a)(1)). This consideration should apply to all the qualifying characteristics of an historic property. Adverse effects also may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. Examples of adverse effects include, but are not limited to:

a. Physical destruction, damage, or alteration of all or part of the property;

b. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;

c. Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;

d. Neglect of the property, resulting in its deterioration or destruction;

e. Transfer, lease, or sale of the property.

4.5.2 Applicant Proposed Measures

APMs to address potential effects related to cultural resources were proposed; however, upon review of said measures, BLM staff determined that these measures were not sufficiently detailed to be considered in this analysis.

[1] *Setting* is the physical environment of a historic property. It refers to the character of a place in which the property played its historical role. *Feeling* is the property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. *Association* is the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character (NPS, 1990).

4.5.3 Alternative 1: Proposed Action

4.5.3.1 Direct and Indirect Impacts

Construction

Based on the anticipated disturbance below ground and the anticipated above-ground intrusion into the flat landscape, Project activities that have the potential to affect cultural resources include:

1. General cutting and filling would disturb portions of the proposed plant site to a maximum depth of 20 feet.

2. In the solar array fields, foundations for trackers and fixed tilt mounting systems would cause ground disturbance down to a maximum depth of 7 feet below grade, and the solar module arrays would intrude into the flat landscape to a maximum height of 10 feet above grade.

3. Inverter packages and shade structures for Power Conversion Stations would reach a maximum height of 12 feet. Trenches excavated for cables would reach a depth of 3 feet. A typical building and water tank would be approximately 30 feet tall.

4. Gen-tie line monopole support towers would be a maximum of 120 feet tall with foundations 20 feet deep. Each monopole foundation would require a 50-foot square area of temporary disturbance and a 12-foot square area of permanent disturbance.

Ground-disturbing construction activities associated with the Project could directly affect cultural resources by damaging and displacing artifacts. Construction activities could diminish site integrity of historic properties and alter the characteristics that make the properties eligible for the NRHP. These historic properties, and any additional archaeological sites that are inadvertently discovered during construction, would be located within the full extent of the Project’s below-grade impacts (inclusive of foundations and trenches) and above-grade impacts (inclusive of above-ground facilities). In addition, indirect effects to archaeological resources, historic architectural resources, and places of traditional cultural importance could occur. For example, increased site access could result in vandalism or unintentional harm to cultural resources. In addition, flash floods, whose effects would likely be magnified due to soil erosion caused by the proposed project, could cause disturbance of cultural resources located on or below the surface.

As a result of the literature and records searches, archival research, Native American consultation, and field investigations described in Section 3.5, a total of 114 archaeological sites (20 prehistoric, 79 historic-period, 9 multi-component, and 6 of undetermined age), have been identified within the ROW application area. One hundred and one archaeological sites are located within the APE for the Project. Of these, 9 have been determined eligible for the NRHP (CA-RIV-2846, CA-RIV-3419, CA-RIV-10222, CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246), 87 have been determined not eligible for the NRHP, and 5 have not been evaluated for listing in the NRHP.

The BLM has found that, of the nine resources determined eligible for listing in the NRHP, seven (CA-RIV-10222, CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246) could not be avoided by the Project and therefore would be adversely affected by this alternative by damage to and displacement of artifacts and features. Six of the NRHP-eligible archaeological sites (CA-RIV-10194, CA-RIV-1010225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, and CA-RIV-10246) are associated with the NRHP-eligible DTC-C/AMA. The remaining two resources (CA-RIV-2846 and CA-RIV-3419) determined eligible, as well as the five unevaluated resources would be avoided by Project design and through the imposition of site management conditions. The unevaluated archaeological sites will be treated as eligible for the NRHP under Criterion D for their scientific and information potential, and their significant values would be avoided. The proposed construction, operation, maintenance, and decommissioning of the Project would permanently affect the 87 archaeological sites determined ineligible for listing in the NRHP by damaging and displacing artifacts and features. Table 4.5-1 describes the NRHP-eligible sites within the Project APE that would be adversely affected.

TABLE 4.5-1
NRHP ELIGIBLE SITES ADVERSELY AFFECTED WITHIN THE APE

Site Name	Site Type
CA-RIV-10225	Historic debris scatter (DTC/C-AMA)
CA-RIV-10194	Historic military camp site, historic debris scatter (DTC/C-AMA)
CA-RIV-10222	Prehistoric ceramic scatter
CA-RIV-10240	Historic military debris scatter, tank tracks (DTC/C-AMA)
CA-RIV-10242	Historic military debris scatter, tank tracks, ground features/emplacements (DTC/C-AMA)
CA-RIV-10245	Historic military maneuver area, tank tracks, ground features/emplacements (DTC/C-AMA)
CA-RIV-10246	Historic military maneuver area, tank tracks, ground features/emplacements (DTC/C-AMA)

The Project may affect buried archaeological resources. A geoarchaeological study conducted for the Project indicated that Holocene-age deposits, such as dry washes and eolian deposits, within the Project area have a high potential for surface and buried archaeological deposits. Late Pleistocene deposits, as well as the older fluvial deposits, have a medium to high potential for shallow subsurface deposits, and a low potential for deep subsurface deposits.

The single built environment resource within the Project area, a buried water pipeline determined eligible as a contributing element to the Army Base, is located within the proposed gen-tie line and access road route. The water pipeline was determined eligible for the NRHP as a contributing element to the NRHP-eligible Blythe Army Air Base as part of the BSPP. The Project would not affect the pipeline because the pipeline would be spanned by the gen-tie line; further, the section of the pipeline to be crossed by the gen-tie line and access road that would be used by the Project is being removed for safety concerns as part of the BSPP.

NHPA §106 government-to-government consultation with interested Indian tribes is on-going. An Ethnographic Assessment to identify sites to which Tribes may attach cultural or religious significance to, and that would be affected by the Project, is currently underway. The results of that study are not yet available. See Section 5.2.2.

Mitigation Measure CUL-1 would serve to resolve adverse effects to historic properties as a result of the Project. Provisions to resolve the adverse effects to historic properties will be described in a MOA prepared in accordance with §106. A draft of this MOA is included as Appendix L.

Operation and Maintenance

The primary potential for direct impacts to cultural resources during operation and maintenance of the Project under Alternative 1 is from unanticipated damage of known or post-review discovery of archaeological sites. During operation and maintenance, the Applicant's worker training program, use of environmental monitoring, and clear demarcation of designated access roads would reduce the risk of unanticipated impacts to cultural resources within the Project APE. Avoidance and protection of resources during the operation and maintenance phase of the project required by Mitigation Measure CUL-1 would protect cultural resources originally avoided by construction impacts. Because operation and maintenance activities would be limited to the approved construction footprint of the Project, no additional direct or indirect impacts to cultural resources would be expected during operation and maintenance.

NHPA §106 and government-to-government consultation with interested Indian tribes is on-going. An Ethnographic Assessment to identify sites to which Tribes may attach cultural or religious significance to, and that would be affected by the Project, is currently underway. The results of that study are not yet available. See Section 5.2.2.

Decommissioning

The primary potential for direct impacts to cultural resources during the decommissioning phase of Alternative 1 is from unanticipated damage of known or post-review discovery of archaeological sites. The Applicant's worker training program, use of environmental monitoring, and clear demarcation of designated access roads would reduce the risk of unanticipated impacts to cultural resources within the ROW, but outside the smaller construction footprint of the Project site. Avoidance and protection of resources (Mitigation Measure CUL-1) during the decommissioning phase of the Project would protect cultural resources originally avoided by construction impacts. Because decommissioning activities would be limited to the approved construction footprint of the Project, no additional direct impacts to cultural resources would be expected.

Project decommissioning would eliminate or substantially reduce indirect impacts to cultural resources by the removal of modern elements inconsistent with the historic setting of the area.

4.5.4 Alternative 2: Reduced Acreage

4.5.4.1 Direct and Indirect Impacts

A total of nine archaeological sites would be directly affected by the construction, operation, maintenance, and decommissioning of Alternative 2. Of the nine sites that would be directly affected under this alternative through damage to and displacement of artifacts and features, eight were determined not eligible and one (CA-RIV-10225: Historic debris scatter (DTC/C-AMA)) has been determined eligible for the NRHP based on its information potential and association with the NRHP-eligible DTC-C/AMA historic district.

NHPA §106 government-to-government consultation with interested Indian tribes is on-going. An Ethnographic Assessment to identify sites to which Tribes may attach cultural or religious significance to, and that would be affected by the Project, is currently underway. The results of that study are not yet available. See Section 5.2.2.

Alternative 2 would affect a total of 85 fewer archaeological sites when compared to the Proposed Action, including eight fewer NRHP-eligible archaeological sites. Mitigation Measure CUL-1 would serve to resolve adverse effects to historic properties as a result of Alternative 2.

4.5.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.5.5.1 Central Route

A total of 12 archaeological sites would be affected by construction of the Central Route. However, all of these sites have been determined not eligible for listing in the NRHP.

The Central Route would affect a total of 20 fewer archaeological sites when compared to the Proposed Action. The Central Route would affect 2 fewer NRHP-eligible archaeological sites, and 16 fewer archaeological sites that are not eligible for the NRHP. Mitigation Measure CUL-1 would serve to resolve adverse effects to historic properties as a result of the Central Route.

4.5.5.2 Western Route

A total of eight archaeological sites would be affected by the construction of the Western Route. One of these, site CA-RIV-3419, has been determined eligible for listing in the NHRP. Three additional sites have not been evaluated for NRHP eligibility. The Applicant has confirmed that these unevaluated archaeological and historic sites within the Project APE would be avoided by Project design and through the imposition of site management conditions. These archaeological sites will be treated as eligible for the NRHP under Criterion D and their significant values would be avoided.

The Western Route would affect a total of 24 fewer archaeological sites when compared to the Proposed Action. The Western Route would affect the same number of NRHP-eligible or unevaluated resources. Mitigation Measure CUL-1 would resolve adverse effects to historic properties as a result of the Western Route.

4.5.6 Alternative 4: No Action Alternative

Under this Alternative, the site would not be expected to change noticeably from existing conditions. Alternative 4 would not result in any of the impacts to cultural resources that were described for Alternative 1.

4.5.7 Cumulative Impacts

The regulations implementing §106 of the NHPA contemplate close coordination between the NEPA and NHPA processes (40 CFR §1502.25(a); 36 CFR §800.8(a)) and both require an examination of cumulative impacts. 36 CFR §800.5(a)(1) (defines an undertaking's "adverse effect" to include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative").

For purposes of this cumulative analysis, impacts on cultural resources could occur at any time throughout the life of the Project. The proposed construction, operation, maintenance, and decommissioning of the Project would permanently affect 94 archaeological sites by damaging and displacing artifacts and features. Seven of these archaeological sites have been determined eligible for the NRHP and are therefore automatically eligible for the CRHR. The geographic scope considered for potential cumulative effects to historic properties consists of the DTC-C/AMA historic district, described in Section 3.5.1.6.

The past, present, and reasonably foreseeable projects considered to be the cumulative scenario for this Project are shown in Tables 4.1-3 and 4.1-4. These are primarily large-scale renewable energy projects that require extensive grading and development. The cumulative projects also include several transmission lines and non-renewable energy projects, as well as residential and commercial developments. Ground disturbance and construction associated with these types of projects would be on a smaller scale than the Proposed Action and Alternatives, given the smaller acreage generally involved with these projects.

The Project would directly affect six archaeological sites that have been determined eligible for the NRHP and are associated with the DTC-C/AMA, a NRHP-eligible historic district. A MOA developed pursuant to §106 of the NHPA for the Project will include provisions to resolve the adverse effects to these archaeological sites.

The specific DTC-C/AMA archaeological sites and features that would be adversely affected are associated with the DTC-C/AMA and are part of the historic setting that defines the DTC-C/AMA historic district. Although these features are associated with the DTC-C/AMA, they are typical, and to some extent redundant, of the features that occur within the DTC-C/AMA and define the historic setting of the DTC-C/AMA. Within the range of significant values associated with features of the DTC-C/AMA, the specific features that would be affected (trash and debris scatters, tank track imprints, earthen gun emplacements, and features such as foxholes, concertina wire, and rifle pits) contribute to and help define the historic setting, but in and of themselves do not embody the same comparative level of significance as major DTC-C/AMA features, such as the Divisional camps, the Palen Pass maneuver area, or the Rice and Essex airfields. The Project, in combination with other recent authorized solar projects, would first and foremost incrementally and cumulatively affect the historic setting of the DTC-C/AMA historic district. The MOA will describe mitigation measures to manage the adverse direct, indirect, and cumulative effects of the Project on the DTC-C/AMA.

The Project's contribution to these cumulative impacts would be reduced through implementation of Mitigation Measure CUL-1

Most of the cumulative projects are on BLM or other federal land and, for this reason, are or would be subject to NEPA and the NHPA, which contain cultural resource protective requirements related to investigations, impact assessment, avoidance, and mitigation. The cumulative projects that would not be located on federal land would require discretionary state or local agency approvals, and so would be subject to CEQA; therefore, any related impacts on cultural resources would be subject to cultural resource-protective requirements based on state law to avoid or minimize these impacts. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

4.5.8 Mitigation Measures

CUL-1: The BLM's execution of an MOA for the proposed undertaking in accordance with the requirements of §106 of the NHPA will lead to avoidance, minimization, or mitigation of potential adverse effects to historic properties. The BLM shall prepare the MOA in consultation with the ACHP, SHPO, the Applicant, Riverside County, Indian tribes, and other identified consulting parties. The MOA will be binding on the Applicant and the proposed undertaking. An executed MOA represents the BLM's completion of the NHPA §106 process. The MOA must be executed prior to the ROD.

The MOA will contain measures to avoid, minimize, and mitigate adverse effects to historic properties and detail the process for activities to proceed in areas where historic properties are not now known to exist; procedures for treatment of unanticipated effects and post-review discoveries; recognition that BLM will comply with NAGPRA; compliance monitoring; dispute resolution; and tribal participation. Resolution of adverse effects to historic properties will be developed in consultation and may include research and documentation, data recovery excavations, curation, public interpretation, or use or creation of historic contexts.

In addition, a HPTP shall be prepared, appended to the MOA, and implemented and shall contain procedures to avoid, minimize, and mitigate effects to historic properties, and could include measures similar to the following:

a. On the basis of preliminary CRHR eligibility assessments, NRHP eligibility assessments, or existing NRHP eligibility determinations, the BLM may require the relocation of project components to avoid or reduce damage to cultural resource values. Where operationally feasible, potentially NRHP- or CRHR-eligible resources shall be protected from direct project impacts by project redesign within previously surveyed and analyzed areas.

b. Where CRHR- or NRHP-eligible or -listed historic properties cannot be protected from direct effects by project redesign, the Applicant shall comply with appropriate mitigative treatment(s) that will be detailed in the HPTP.

c. All CRHR-listed or eligible cultural resources and all NRHP-listed, eligible, and unevaluated cultural resources being treated as eligible (as determined by the BLM) that will not be affected by direct impacts, but are within 50 feet of project construction activities, shall be monitored by a qualified archaeologist. Protective fencing or other markers, at the BLM's discretion, shall be erected and maintained to protect these resources from inadvertent trespass for the duration of construction in the vicinity.

d. The HPTP shall contain a research design and a scope of work for evaluation of cultural resources and for data recovery or additional treatment of NRHP-listed or -eligible sites that cannot be avoided. Additional treatment for resources could include sample excavation and/or surface artifact collection, site documentation, curation, public interpretation, or use or creation of historic contexts. Additional content of the treatment plan will be dictated by the consultations associated with the development of the MOA.

e. Construction work within 100 feet of historic properties that require data-recovery fieldwork shall not begin until authorized by the BLM.

f. Archaeological monitoring shall be conducted by qualified archaeologists familiar with the types of historical and prehistoric resources that could be encountered within the project area, and under direct supervision of a principal archaeologist. All supervisory cultural resources personnel will be approved by the BLM through the agency's Cultural Resource Use Permitting process. A tribal cultural consultant may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with Indian tribes. The HPTP shall indicate the locations where tribal cultural consultants may be required. The Applicant shall retain and schedule any required tribal cultural consultants.

g. In the event of unanticipated effects or post-review discoveries during construction, operation and maintenance, or decommissioning, procedures outlined in the MOA shall be adhered to. At a minimum, this shall include stop work orders in the vicinity of the find, recordation and evaluation of the find by a qualified archaeologist, notification of the find to BLM, and appropriate treatment measures, possibly including data recovery or avoidance.

h. The Applicant shall develop and implement a Long Term Management Plan for post-construction monitoring and condition assessment of sites in the APE which could be subject to impacts from project operation and maintenance activities.

4.5.9 Residual Impacts after Mitigation Incorporated

Implementation of Mitigation Measure CUL-1 would reduce but may not fully avoid Project-related impacts on cultural resources. Cultural resources damaged or destroyed by construction activities, even if subjected to mitigation measures, would be permanently lost from the archaeological record. These cultural resources therefore would be unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available. Unavoidable adverse effects on cultural resources would result from construction, operation, maintenance, and decommissioning of all of the Project components under Alternative 1. Consultations may raise issues that cannot be resolved through the implementation of mitigation measures. Prescribed treatments may resolve adverse effects under NHPA §106. However, given the scale and potential significance of the resources identified, impacts may remain significant under NEPA despite implementation of the MOA.

4.6 Environmental Justice

4.6.1 Methodology for Analysis

To carry out the policy set forth in NEPA, the federal government has a "… continuing responsibility … to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may … achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities" (42 USC §4331(b)(5)).

This analysis of potential effects of the Proposed Action and alternatives on environmental justice issues reflects this mandate as well as that contained in Executive Order No. 12898, which requires a Proposed Action's impacts on environmental justice to be considered as part of the NEPA process if the Proposed Action would "result in impacts that are appreciably more severe in magnitude or are predominately borne by any segment of the population, for example, household population with low income or a minority population in comparison with a population that is not low income or minority." The Presidential memorandum accompanying the executive order states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA."

To consider environmental justice issues in the context of the Project, this analysis uses a demographic screening evaluation to determine whether a minority and/or low-income population exists within two potentially affected areas. The primary area consists of a 6-mile radius beyond the site boundary and is consistent with air quality modeling of the range of the Project's air quality impacts. A secondary area consists of a 2-hour travel radius centered on the Project site and reflects the potential area from where construction workers may be brought together for construction of the Project.

The demographic screening to determine the presence of minority and low-income populations is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (USEPA, 1998). The screening process relies on 2010 Census data to determine the presence of minority and below-poverty-level populations. In addition to the demographic screening analysis, this PA/FEIS follows the steps recommended by the USEPA's guidance documents, which recommend outreach and involvement, and, if warranted, a detailed examination of the distribution of impacts on segments of the population.

The USEPA guidance (USEPA, 1998) provides a numerical threshold, 50 percent, to identify an affected community of minority population for analysis of environmental justice. The guidance also states that the percentage of minority population in the affected area should be "meaningfully greater" than that in the general population to which the affected population is compared. Although the guidance does not provide a numerical threshold for this comparison, for this analysis, the percentage of minority population is considered to be meaningfully greater than that of the general population if the percentage of minority population in the affected area is (a) greater than 150 percent of that in the general population or (b) greater than the percentage in the general population plus 50 percent of the difference between that percentage and 100 percent. Threshold (a) is used when the percentage of minority population in the general population is less than 50 percent; threshold (b) is used when that percentage is 50 percent or over. For this analysis, because minority populations are nearly all over 50 percent, including for Riverside County, an affected area with minority population has been included in the analysis of environmental justice when both conditions are met, that is, when the percentage of minority population is both over 50 percent and also meaningfully greater than that of the general population.

The USEPA guidance does not provide a numerical threshold for identifying a low-income population. It recommends use of Census data on poverty income as one indicator and other local data as may be available. This analysis uses the percentage of affected population who either as individuals or as members of families having incomes below the Census-defined poverty level. The percentage is compared to that of the general population, and the affected area is included in the analysis if the percentage of low-income population is meaningfully greater than that of the general population, based on the same thresholds as in the case of minority population.

In addition, the USEPA guidance states that the analysis of environmental justice should determine if the affected area of minority population and/or low-income population is subject to "disproportionately high and adverse human health or environmental effects" from the Project. The guidance suggests that a comparative analysis be performed on potential Project impacts to the affected population and a reference population to determine the type of high and adverse effects and the extent of disproportionality (USEPA, 1998).

The primary affected area, 6 miles around the boundary of the Project site and the transmission corridor, includes agricultural lands on northwestern Palo Verde Mesa, portions of the City of Blythe and its sphere of influence, Blythe Airport, and unincorporated communities of Mesa Verde and Nicholls Warm Springs, both located south of Blythe Airport and I-10. The secondary affected area of 2 hours' travel time generally covers eastern Riverside County and La Paz County, Arizona (see Figure 3.15-1). Small areas of Imperial, San Bernardino, and San Diego counties in California and Yuma and Maricopa counties in Arizona also are within the 2-hour travel area. However, as discussed in Section 3.15, *Social and Economic Setting*, there are no major population centers found within both the travel area and these counties. Therefore, the secondary area for this analysis is limited to CT 469 in Chuckwalla CCD (which includes Mesa Verde and Nicholls Warm Springs), Blythe CCD (which includes Palo Verde Valley and Palo Verde Mesa), the City of Blythe, La Paz County, and Colorado River Indian Reservation, which is located in both Arizona and California. The Project site is located near the eastern border of CT 469.

Minority populations within both the primary and secondary affected areas represent over 50 percent of total population, except for La Paz County (Table 3.6-1). The areas therefore are of potential concern for environmental justice analysis. However, the percentage of minority population in Riverside County as a whole is over 60 percent, due to the presence of large Hispanic and Latino populations in the county (45.5 percent). Accordingly, the percentage of minority population in the affected area is meaningfully greater than that of the county if it exceeds 80 percent (i.e., 60 percent plus half of the 40 percentage point difference with 100 percent).

Percentages of minority populations in both primary and secondary affected areas are below this threshold, with the exception of CT 9810, which is a special case because it consists only of two state prisons, Ironwood and Chuckawalla Valley. This area is outside the primary affected area, and it is screened from the Project site by the southern end of McCoy Mountains. Many effects, such as potential traffic congestion, would not pose a direct impact to these institutionalized populations. The percentage of minority population on the Colorado River Indian Reservation is 62.4 percent. Although the reservation is located in both Arizona and California, Riverside County is used as the general population for purposes of this analysis.

With respect to income, the percentage of household population (that is, not including population living in group quarters) in both primary and secondary affected areas is shown in Table 3.6-1. The percentage of Riverside County population with income below the poverty level is 16 percent. Accordingly, the percentage of population below the poverty level in an affected area is considered to be meaningfully greater than the general population if it exceeds 24 percent (i.e., 150 percent of 16 percent). The percentage of low-income population in affected areas is below this threshold, except for CT 469 (26.2 percent) and the Colorado River Indian Reservation (25.6 percent). However, the Reservation's extended geography, with distances of 15 to 50 miles from the Project site, diminishes its potential for disproportionately high and adverse impacts. Thus the affected area with respect to environmental justice would be CT 469, in particular its eastern area near the Project site.

The findings and analysis contained in the following sections of this PA/FEIS have been reviewed as part of this analysis of environmental justice issues: 4.2, *Air Resources*; 4.7, *Geology and Soils*; 4.9, *Hazards and Hazardous Materials*; 4.12, *Noise*; 4.14, *Recreation and Public Access*; 4.15, *Social and Economic Impacts*; 4.17, *Transportation and Traffic*; 4.19, *Visual Resources*; 4.20, *Water Resources*; and 4.22.2, *Transmission Line Safety and Nuisance*. Other sections (such as cultural resources, mineral resources, and lands and realty) were determined to have no potential health or environmental effects on the local populations and, therefore, were not reviewed further for potential environmental justice impacts. In reviewing each of these sections, this environmental justice analysis considers potential impacts and mitigation measures and whether a "disproportionately high and adverse" (CEQ, 1997) impact would result for the community of concern, CT 469.

4.6.2 Applicant Proposed Measures

There are no APMs to address potential effects of environmental justice.

4.6.3 Alternative 1: Proposed Action

The environmental justice review determined that during construction, operation, maintenance, closure, and decommissioning of the Project, impacts related to air resources, geology and soils, hazards and hazardous materials, noise, and transmission line safety and nuisance would be limited to a small area surrounding the Project site and would not affect the community of concern. The potential for human health and environmental impacts to result in disproportionately high and adverse impact on residents of CT 469 is described below.

Construction, Operation, and Maintenance

Project construction, operation, and maintenance may result in potential impacts on the community of concern for the following issues:

Recreational Resources

One existing OHV route on the Project site would be closed for the duration of the Project, reducing access for recreational activities. However, implementation of mitigation measures would reestablish connectivity to areas served by this route. Additionally, the area within the solar plant site boundary would be inaccessible for recreational use. However, this impact would not be disproportionately high and adverse for the community of concern because these recreational resources serve and are accessible to all residents of the local area, and alternative recreational sites are equally accessible and available to residents of CT 469 as to other users.

Socioeconomic Issues

Expenditures related to Project construction, operation, and maintenance are expected to result in positive economic impacts to the surrounding region. The need for temporary housing for construction workers may increase demand for vacant housing and for transient facilities (hotels, motels, and camping sites). The need for housing for permanent employees who may relocate to the Blythe area would increase the demand for housing to be purchased or rented. Such demand would result in positive impacts to owners of vacant and transient housing and negative impacts to those seeking to relocate into the surrounding areas by limiting the availability of remaining housing options. This is not considered to be a disproportionately high or adverse impact to populations in CT 469 because it is likely that all residential neighborhoods in the local area would be affected equally by an increase in demand for both temporary and permanent housing.

Transportation and Traffic

Construction-related traffic, both from worker commuting and transport of materials, temporarily would increase traffic levels on I-10, Mesa Drive, and the access road to the Project site. Operation and maintenance would result in a minor increase in traffic. No Project-related traffic increases would reduce the LOS of I-10 in this area or cause traffic levels that would exceed the capacity of local roadways. These impacts would not be disproportionately high or adverse for populations in CT 469.

Visual Resources

The Project would result in short-term impacts from construction lighting and visible dust plumes, and adverse effects from large-scale visual disturbance in the landscape resulting from construction activities and equipment. During operation and maintenance, the Project may be a source of adverse visual impact as a large-scale visual disturbance that would introduce industrial components and facilities to the landscape. Due to the Project site's distance from populated areas this would not be a disproportionately high or adverse impact for residents of CT 469.

Water Resources

The Project would not result in groundwater supply impacts from the use of groundwater for Project construction, operation, or maintenance, nor would it involve wastewater discharges that could affect drinking water supplies or other water bodies. It could result in water quality impacts from the accidental release of water pollutants, such as surface sediments. Mitigation measures would reduce these impacts. These impacts would not result in disproportionately high or adverse effects for residents of CT 469 because it would not affect water resources that are used only or primarily by this community.

Decommissioning

Impacts from Project decommissioning would be similar to those from Project construction, except that decommissioned materials and equipment would be transported away from the site to secondary users or to approved disposal sites.

In summary, the Project would not result in any impacts to the community of concern (CT 469) that would be disproportionately high and adverse. No environmental justice impacts would be associated with the Proposed Action.

4.6.4 Alternative 2: Reduced Acreage

4.6.4.1 Direct and Indirect Impacts

Alternative 2 would cause the same types of resource-related impacts as the Proposed Action, which are described above. However, because the solar plant site would be smaller for Alternative 2 than for the Proposed Action, the severity of several of these impacts would be reduced compared to those of the Proposed Action. For the same reasons as for the Proposed Action, Alternative 2 would cause no disproportionately high or adverse impacts on low-income populations.

4.6.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.6.5.1 Central Route

Direct and Indirect Impacts

The Central Route would cause the same types of resource-related impacts as the Proposed Action. The Central Route would be incrementally shorter than the proposed gen-tie line and access road route, and so it would result in a slightly reduced effects in several resource areas. Furthermore, the Central Route would be located farther from the local populated areas of CT 469. Nonetheless, there would be no substantial difference between the Central Route and the

Proposed Action, and the Central Route would not result in any disproportionately high or adverse impacts on low-income populations.

4.6.5.2 Western Route

Direct and Indirect Impacts

The Western Route would cause the same types of resource-related impacts as the Proposed Action. The Western Route would be incrementally longer than the proposed gen-tie line and access road route, and so it would result in slightly increased effects. However, the Western Route would be located farther from the local populated areas of CT 469. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action, and the Western Route would not result in any disproportionately high or adverse impacts on low-income populations.

4.6.6 Alternative 4: No Action Alternative

Because the No Action Alternative would not result in any of the impacts described in Sections 4.2 through 4.24, it would have no disproportionately high and adverse impacts to populations in the affected area. No impacts related to environmental justice would occur.

4.6.7 Cumulative Impacts

The Project would have no impact related to environmental justice; therefore, it would not cause or contribute to any cumulative impact in this regard.

4.6.8 Mitigation Measures

None required.

4.6.9 Residual Impacts after Mitigation Incorporated

Because no mitigation measures are recommended, impacts to environmental justice would be the same as discussed in Section 4.6.3, *Alternative 1: Proposed Action*.

4.7 Geology and Soils Resources

4.7.1 Impact Assessment Methodology

The Proposed Action and alternatives are evaluated qualitatively in terms of their effects on soil resources and their susceptibility to geologic and seismic hazards. Potential effects with respect to geology and soils are assessed based upon existing publications and maps completed by state and federal agencies, such as the USGS, CGS, USDA, and the CDMG. The potential for damage to proposed structures or increased risk of injury due to geologic hazards is analyzed using available data from the aforementioned sources. In addition, the severity and significance of geology and soils impacts are analyzed in the context of existing regulations and policies aimed at abating potential impacts to soil resources and from geologic and seismic hazards.

The Applicant has committed to preparing a design-level geotechnical investigation for the Proposed Action and gen-tie line, which will be necessary to inform the Project's final engineering designs and construction methods. While the scope, findings, and recommendations of the report are forthcoming, this analysis assumes that the geotechnical report will be consistent with the current state of practice in the field of engineering geology, and will provide the information necessary to design the Project in accordance with the CBC.

This includes soil characterization, calculation of wind and seismic loads, and site preparation and engineered fill requirements necessary for the proper design and installation of all Project components. This analysis is aimed at identifying potential geologic hazards that may not be adequately addressed through implementation of standard building practices as required by the CBC.

The following issues were considered in the analysis of impacts related to geology and soils for the Proposed Action and each alternative:

1. Accelerated and/or environmentally harmful soil erosion;
2. Damage to project elements or increased exposure of the public to risks from rupture of a known earthquake fault;
3. Injury, death, or property damage as a result of earthquake induced ground deformations (e.g. lateral spreading, subsidence, liquefaction, or collapse), or otherwise unstable soils;
4. Injury, death, or property damage as a result of an on-site or off-site landslide;

4.7.2 Applicant Proposed Measures

There are no APMs to address potential effects to geology and soil resources.

4.7.3 Alternative 1: Proposed Action

4.7.3.1 Direct and Indirect Impacts

Geologic and seismic hazards would only affect the Project during the construction and O&M phases, during which built structures could be exposed to adverse or unfavorable conditions related to soils and/or geology, or to the effects of a large regional earthquake. Following the decommissioning phase, all Project facilities would be removed, precluding impacts related to geology, soils, and/or seismicity. During the decommissioning phase, however, soil disturbances would occur that would be of a similar nature to those experienced during the construction phase, resulting in the potential to contribute to erosion impacts. For these reasons, the following discussion only pertains to the construction and O&M phases of the Project for all geology and soils impacts except erosion, which will also include the decommissioning phase.

Construction, Operation and Maintenance, and Decommissioning

Ground Rupture

The Project site does not lie within a state-established Earthquake Fault Zone, and no active or potentially active faults are mapped within the study area. The closest active fault to the site is the Coachella Valley section of the San Andreas Fault, located 58 miles southwest of the Project, and there is no substantial evidence that an otherwise active fault capable of producing fault rupture underlies the Project site.

Ground Shaking

Due to the potential for relatively large earthquakes to the west and northwest of the Project site, the site may be subject to moderately intense earthquake-related ground shaking (MMI VI) at some point during the Project's operating lifetime. As discussed in Section 3.7, *Geology and Soils*, there is a 10 percent chance that the Project area could experience a PGA value of 0.129g or greater over the next 50 years. A PGA of 0.129g could result in slight damage to older structures and would not likely result in damage to newer structures built according to current design standards. Relative to many areas in California, the Project site is distant from known, active faults and experiences less frequent and lower levels of shaking.

The highest severity of ground-shaking at the site that can be reasonably anticipated would be moderate, and structural designs would be consistent with the CBC, which requires that engineers design structures to withstand earthquake loads as well as other loads (such as wind). As stated in Chapter 2, *Proposed Action and Alternatives*, the choice of foundation design is dependent on geotechnical information about the soil and the mounting structural design. In order to ensure that the proper geotechnical information is developed, Mitigation Measure GEO-1 would require the Applicant's site-specific geotechnical report to determine the physical and chemical characteristics of the site's soils, ground response to earthquakes (see "secondary earthquake hazards," below), as well as the appropriate seismic design parameters necessary to develop adequate engineering designs and construction plans for the Project. Mitigation Measure GEO-1 would ensure compliance with the CBC, and would be sufficient to minimize risks associated with ground-shaking. Based on the site's distance from active faults and the low likelihood of strong seismic ground shaking at the site, in addition to the design and construction standards imposed by the CBC, the impact of strong seismic ground shaking would be minor and no additional mitigation is required.

Secondary Earthquake Hazards

Liquefaction. The Project area is underlain by soils composed of poorly sorted, coarse grained material, and a water table depth of greater than 100 feet below ground level (DWR, 2010 as cited in Tetra Tech EC, Inc., 2011).

Because liquefaction typically requires poorly consolidated, well sorted, and finer grained materials that are saturated within the first 40 feet beneath the ground surface, there is a very low liquefaction potential at the site. Further, the potential for lateral spreading during seismic events would be negligible as the Project site is nearly flat. Even if the soils were susceptible to liquefaction, the minimum intensity needed to trigger liquefaction in susceptible soils is generally MMI VII (strong). As discussed in Section 3.7, *Geology and Soils*, there is a very low likelihood of strong seismic ground shaking at the site.

Settlement. As discussed in Section 3.7, *Geology and Soils*, the Project site is generally underlain by unconsolidated alluvial fan deposits consisting primarily of loose grain and sand that results in variations of density among strata. These layered density variations create the potential for earthquake-induced settlement, although the magnitude of settlement would likely be minor because the maximum level of ground shaking that can be reasonably anticipated would be moderate. Nevertheless, the potential for and, if necessary, mitigation for the effects of earthquake-induced settlement of site soils during an earthquake would be addressed in a site-specific geotechnical report, as described in Mitigation Measure GEO-1. Should the geotechnical report determine based on site-specific data that mitigation is necessary, such methods might include deep foundations (driven piles; drilled shafts) for severe conditions, geogrid-reinforced fill pads for moderate severity and over-excavation and replacement for areas of minimal hazard. In either case, the effect of earthquake-induced settlement in the event of an earthquake would be minor.

Landslides. The Project site is located on the broad, gently southeast-sloping alluvial fan and alluvial fan deposits of the Palo Verde Mesa. Slope gradients on the Project site do not generally exceed 1 percent. Therefore, the potential for earthquake induced landslides to occur is negligible because the Project site is nearly flat.

Regional or Local Ground Subsidence

Because no petroleum or natural gas withdrawals take place in the Project vicinity (see Section 3.11, *Mineral Resources*), the potential for subsidence is limited to the possible effects of groundwater drawdown. The PA and Final EIS prepared for the BSPP concluded that no regional subsidence due to historic groundwater withdrawal has been reported in the vicinity (BLM, 2010). This includes localized or regional subsidence during the 1980's and 1990's, when regional groundwater extraction was at its historic maximum of approximately 48,000 AFY in the general area. The Project is expected to consume approximately 650 to 750 AF of water during the entire construction phase, plus approximately 30 to 44 AF per year of water during the entire operations phase, for a total of approximately 1,550 to 2,070 AF over the anticipated 30-year operation period of the Project. Because the groundwater withdrawal that would occur during construction, operation, and maintenance of the Project represents a minor fraction of the historic maximum, which is not known to have caused subsidence, Project-related groundwater withdrawals are not expected to result in regional or local subsidence issues. Therefore, the potential for local or regional ground subsidence resulting from groundwater extraction (no petroleum or natural gas withdrawal occurs in the Project vicinity) is considered to be very low and no mitigation is required.

Hydrocompaction

As discussed in Section 3.7, *Geology and Soils*, given the depositional environment of the Palo Verde Mesa, soil units within the Project site may be subject to hydrocompaction (also referred to as collapsible soils). Hydrocompaction of site soils would not present a life or safety hazard to site workers or the public, but may cause damage to proposed facilities if hydrocompaction-related effects are not anticipated or considered in site preparation and foundation designs for the Project. Like expansive soils, described below, soils that experience hydrocompaction are more typically a problem for underground linear appurtenances or flat, rigid foundations where greater surface areas are in contact with collapsible soils, such as might be the case with building foundations and concrete equipment and tower pads. Steel posts for the solar trackers and gen-tie line monopoles that are direct buried are less likely to be adversely affected by hydrocompaction. Regardless, the potential adverse effects of hydrocompaction of site soils during the construction and O&M phases of the Project would be adequately addressed through the compaction and grading requirements of the CBC and any more stringent or specific recommendations provided by the Applicant’s project-specific geotechnical report described in Mitigation Measure GEO-1. Typical building practices might include moisture conditioning of the soil to achieve maximum stability, ensuring deleterious materials are removed from soil prior to being placed or moved on-site, and/or over-excavating existing soils and placing structural foundations on a mat of artificial fill compacted to appropriate design specifications. These types of measures, which are standard in the engineering practice and required through building and construction codes, ensure that small ground movements such as long-term soil consolidation or movements due to subsidence or collapsible soils do not damage or deteriorate building foundations and/or other structural components of the Project.

Expansive Soils

According to Table 3.7-2, soils within the Project vicinity are primarily granular soils that do not contain high clay concentrations. Because these soils lack high clay content and are predominantly sandy, they exhibit low shrink/swell potential. Expansive soils are more typically a problem for underground linear appurtenances or flat, rigid foundations where greater surface areas are in contact with expansive soils, such as might be the case with building foundations and concrete equipment and tower pads. Steel posts for the solar trackers and gen-tie line monopoles that are direct buried are less likely to be adversely affected by expansive soils, if present. In either case, the geotechnical report to be completed by the Applicant and described in Mitigation Measure GEO-1 would provide site-specific Project design and construction recommendations, such as over-excavation of soil and use of engineered fill for earthwork, or extending building foundations beneath the zone of water fluctuation. Expansive soils, if present, would be adequately addressed through standard engineering and construction practices and implementation of geotechnical recommendations, if applicable.

Corrosive Soils

Fine grain, moist soils containing sulfides may be present at the Project site and could be corrosive to buried structures. Long-term corrosion can cause damage to buried structures such as foundations and subgrade utilities, and if left unaddressed, can cause serious impairments to the structures function and ability to withstand typical loads. Adequate site preparation as discussed above, which includes foundation placement of a mat of engineered fill, is likely to reduce the risk of corrosion for many of the proposed structures. In addition, for monopoles along the gen-tie line, the Applicant would use self-weathering steel composed of a special alloy that forms a protective coating oxide and prevents further corrosion. The effects of corrosive soils would be further mitigated, if necessary, by incorporating any corrosion protection recommendations provided in the geotechnical report, as described in Mitigation Measure GEO-1.

Erosion and Soil Loss

The Project site contains soils that could be susceptible to wind and water erosion during construction, operation and maintenance, and decommissioning. The preliminary stages of construction and decommissioning, especially site grading, excavation, and soil stockpiling, would leave loose soil exposed to the erosive forces of rainfall and high winds. Further, the operation of heavy machinery and vehicles over access roads, staging areas, and construction work areas is likely to compact desert soils and decrease their capacity to infiltrate stormwater, resulting in greater levels of surface runoff in response to rainfall than might otherwise occur under natural conditions. Although the Project would minimize on-site grading and preserve major features of existing on-site drainages, the installation of proposed facilities, including roads, fencing, and solar arrays, could result in erosion and soil loss if not properly mitigated.

Wind Erosion. As part of the analysis of impacts to soil resources for the BSPP, located immediately south of the Project site, an analysis of soil loss under existing conditions, the construction phase, and the O&M phase of the project for each of the three soil series mapped on the project site was conducted (BLM, 2010). While soil conditions can vary within short distances, the Project is underlain by the same soil units as the BSPP, and therefore the analysis is relevant in informing the change in erosion rates that may be caused by the Project during both the construction and operation and maintenance phases. The potential for soil loss by wind erosion on the BSPP site was estimated using the Wind Erosion Prediction System for pre-development (undisturbed), during construction, and operational conditions. The wind erosion values calculated for the site indicate that during construction, only the Aco-Rositas-Carrizo Series type soils would exceed undisturbed conditions, and by a mere 2 percent (BLM, 2010). These soils underlie the gen-tie line that follow along the eastern border of the BSPP, and do not underlie the Project solar plant site. All other soil units had wind erosion rates that were reduced in intensity compared to existing conditions under both the construction and operation and maintenance phases of the BSPP (BLM, 2010).

While the above results were specific to the BSPP site, due to similarities in the type of construction activities and the underlying soil type, wind erosion rates within the Project site would likely show similar minor adverse changes. One possible exception, however, would be in areas where desert pavement is disturbed. Desert pavement, which is most likely to be coincident with the Gunsight-Rillito-Chuckawalla Series type soils, was likewise present on the BSPP site, and the wind erosion analysis acknowledged that disturbance of the protective layer of pebble- to cobble-size material could increase wind erosion rates comparable to the Aco-Rositas-Carrizo Series type soils by exposing the underlying layer of finer-grained material. The origins, characteristics and processes that create desert pavement are further discussed in Section 3.7, *Geology and Soils*. Without protective measures, disturbance of desert pavement, which is limited to the western third of the site, could cause a noticeable and possibly substantial increase in wind erosion rates during construction.

Wind erosion caused by the Project is an issue addressed in the air quality analysis due to the potential for wind erosion to cause increases in fugitive dust emissions (PM 10 and PM2.5). As described in Section 4.2, *Air Resources*, potential increases in fugitive dust emissions would be controlled by numerous APMs, including the use of soil binders along unpaved access roads, watering graded areas on the solar plant site and the off-site linear corridors, treatment of soil stockpiles with soil stabilizers or protective covers, vehicle speed limits, use of windbreaks to minimize wind speeds, and minimizing the disturbance of desert pavement to the extent feasible. These measures, among others, are further described in APMs Air-1, which would reduce construction-generated air quality impacts, and APM Air-2, which would reduce operation- and maintenance-related air emissions. The analysis provided in Section 4.2, *Air Resources*, is equally applicable to the issue of soil loss via wind erosion, and the APMs proposed are likewise equally effective at reducing potential impacts.

Water Erosion. The potential for soil loss by water erosion (sheet and rill erosion) on the BSPP site was estimated using the Universal Soil Loss Equation for pre-development, during construction, and operational conditions (BLM, 2010). Modeling shows soil erosion rates on the BSPP site would increase for both construction and operation on all soil series except on the Aco-Rositas-Carrizo Series type soils during the operations phase, which would revert to its undisturbed erosion rate. Increased rates are due to soil compaction and the resulting increase in bulk density. Compaction of the soil would decrease soil infiltration rates causing greater runoff, especially during high intensity, short duration rainfall events. While the above results were specific to the BSPP site, due to similarities in the type of construction activities and the underlying soil type, water erosion rates within the Project site would be similar. Without protective measures, soil disturbance and compaction, which could occur wherever soil moving activities and access roads are proposed, could cause a noticeable and possibly substantial increase in water erosion rates during low frequency, high intensity rainfall events.

The potential adverse effect of water issues is comprehensively addressed in Section 4.20, *Water Resources*. While the discussion in Section 4.20, *Water Resources* is primarily concerned with changes in hydrology and adverse water quality impacts, the potential for surface water runoff to entrain soils and sediment is a primary concern from a water quality perspective. Consequently, the analysis provided in Section 4.20, *Water Resources* is equally applicable to the issue of erosion and soil loss and the mitigation proposed is likewise equally effective at reducing potential impacts. Mitigation Measure WATER-1 would reduce or avoid potential impacts with respect to construction and decommissioning activities, whereas Mitigation Measure WATER-3 would reduce the Project's effect on long-term erosion rates.

4.7.4 Alternative 2: Reduced Acreage

4.7.4.1 Direct and Indirect Impacts

Alternative 2 would cause the same types of geology and soil-related impacts as the Proposed Action, i.e., potential for damage to Project facilities resulting from adverse soil and seismic conditions for the duration of the Proposed Action, such as expansive soils, hydroconsolidation, corrosive soils, and others. The severity and potential for impacts to Project facilities resulting from adverse soil conditions and seismic-related ground failures would be similar to the Project because the same types of facilities would be built on the same soil types; however, due to the reduced size of this Alternative, there would be fewer structures that would be susceptible to such an impact. Therefore, the likelihood that a Project facility would be affected would be reduced.

The severity of the impact associated with wind and water erosion would be reduced. Because the Alternative 2 solar field would reduce by half the amount of ground disturbance, and because the area to be preserved consists of desert pavement (which is largely confined to the Aco-Rositas-Carrizo soil unit shown in Figure 3.7-2), the potential for wind and soil erosion associated with disturbance of desert pavement would be reduced. Further, because Alternative 2 would require less water use during all phases, the potential for impacts associated with ground subsidence would be reduced.

While Alternative 2 would reduce impacts compared to the Proposed Action, impacts related to adverse soil and seismic conditions could still be considered adverse. Therefore, the same Mitigation Measures would be required as for the Proposed Action.

4.7.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.7.5.1 Central Route

Direct and Indirect Impacts

The Central Route would cause the same types of geology and soil-related impacts as the Proposed Action, but may result in slight differences in the potential for impacts associated with the underlying soil type, such as expansive soils, hydroconsolidation, and corrosive soils, or with seismic hazards. The Central Route would be shifted to the west relative to the proposed gen-tie line and access road and would be slightly shorter, resulting in fewer structures that would be susceptible to such impacts. However, the differences are likely to be minor since the Central Route would traverse similar soil units to those underlying the Eastern Route. Further, due to its slightly reduced ground disturbance, the potential for wind and soil erosion associated with disturbance of desert pavement would be reduced. Nonetheless, there would be no substantial difference between the Central Route and the Eastern Route.

4.7.5.2 Western Route

Direct and Indirect Impacts

The Western Route would cause the same types of geology and soil-related impacts as the Eastern Route, which is proposed as part of the Project, but may result in slight differences in the potential for impacts associated with the underlying soil type, such as expansive soils, hydroconsolidation, and corrosive soils, or with seismic hazards. The Western Route would be slightly longer than the Eastern Route, resulting in more structures that would be susceptible to such impacts. However, the differences are likely to be minor since the Western Route would traverse similar soil units to those underlying the proposed gen-tie line and access road route. Further, due to its slightly increased ground disturbance, the potential for wind and soil erosion associated with the Western Route's disturbance of desert pavement would be increased relative to the Proposed Action. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action.

4.7.6 Alternative 4: No Action Alternative

4.7.6.1 Direct and Indirect Impacts

Throughout the Project site there is the potential for relatively large earthquakes to occur to the west and northwest that would generate moderately intense seismic ground shaking. This seismic activity could possibly result in earthquake-induced settlement. Soils underlying the site may be subject to hydrocompaction and may contain corrosive properties, although no structures would be built that would be exposed to these hazards. Erosion would occur in a manner consistent with existing conditions relating to wind and flash flooding. Alternative 4 would cause no change in baseline conditions relative to site geology and soils, and would not result in any built facilities that would be exposed to geologic hazards. This alternative also would cause no contribution to any cumulative impact related to erosion and/or land subsidence. Compared to the Proposed Action, Alternative 4 would result in reduced impacts.

4.7.7 Cumulative Impacts

Potential cumulative impacts include soil erosion and soil subsidence because the Project would use a groundwater basin shared by many of the projects in the cumulative scenario, and because multiple projects in the cumulative scenario also could result in cumulative effects with respect to soil loss and erosion. These potential cumulative impacts would apply to the construction, O&M, and decommissioning phases of the Project. All other geology and soils issues (such as strong seismic ground shaking, seismically induced ground failure, collapsible soils, and expansive soils) relate to local, site-specific soil conditions, ground response to earthquakes, and the potential for adverse soil conditions to damage the Project's structural components. The presence of other projects in the cumulative scenario would have no affect on either the severity or the probability of geotechnical challenges associated with seismicity and/or the character of underlying soils. Such issues are site-specific and unaffected by the presence of other projects in the cumulative scenario. Therefore, only potential soil erosion and soil subsidence issues are analyzed in this discussion.

For soil erosion, applicable projects listed in Tables 4.1-3 and 4.1-4 would include those that are located in the same watershed as the Project. The greatest potential for cumulative impacts with respect to soil erosion would be if either the construction or decommissioning phases of projects within the geographic scope were to occur concurrently. However, the O&M phase of projects also are included in the temporal scope of cumulative impacts because minor alterations in topography and the addition of impervious surfaces could combine to produce cumulative impacts. For soil subsidence, applicable projects listed in Tables 4.1-3 and 4.1-4 would include all projects that would draw groundwater from the PVMGB. The temporal scope of impacts would include all phases of the projects, because some level of groundwater is expected to be needed for construction and decommissioning activities (e.g., dust suppression) and O&M needs (e.g., panel washing and water service for O&M building).

Adjacent projects that would contribute to local erosion-related impacts if constructed include enXco McCoy, BSPP, the Palo Verde Mesa Solar Project, and the Blythe Airport Solar I Project. Projects that are listed in the cumulative analysis for groundwater levels and groundwater supplies in Section 4.20, *Water Resources*, include the Blythe Energy Project II, Blythe PV Project, BSPP, Desert Quartzite Solar Farm, Gypsum Solar, and the enXco McCoy solar project.

Soil subsidence could occur either at the Project site or a neighboring project site if the combined amount of groundwater use associated with these projects results in a lowering of the groundwater levels sufficient to result in ground subsidence. As discussed in Section 4.20, *Water Resources*, a groundwater model was completed in support of the analysis of groundwater supply and drawdown. Results from the cumulative model analysis predict that drawdowns in the modeled cumulative scenario would not exceed 1 foot, and that the contour of 0.01 foot drawdown is predicted to remain within the PVMGB at the end of the operation and maintenance period. Further, the modeling results indicate that the Project's groundwater usage in combination with that of the cumulative projects would total 131,000 AF of water over the construction and operation and maintenance periods, and would not result in a cone of depression (see Figure 4.20-8). No regional subsidence due to historic groundwater withdrawal has been reported in the vicinity, even during the 1980's and 1990's, when regional groundwater extraction was at its historic maximum of approximately 48,000 AFY, and the amount of cumulative groundwater drawdown in the cumulative scenario is negligible.

Project construction, O&M, and decommissioning of the Project or an alternative could contribute to cumulative soil erosion impacts. However, SWPPPs like the one recommended in Mitigation Measure WATER-1 and Comprehensive Drainage, Stormwater, and Sedimentation Control Plans like the one recommended in Mitigation Measure WATER-3 (see Section 4.20, *Water Resources*) are standard construction industry practice as well as legal requirements for projects over specified thresholds.

4.7.8 Mitigation Measures

The following Project-specific mitigation measures were developed to reduce and/or avoid potential geology and soil impacts associated with the Project and alternatives.

GEO-1: Conduct geotechnical studies to assess soil characteristics and aid in appropriate foundation design. The Applicant and/or its contractor shall perform a design-level geotechnical study that includes subsurface exploration and material testing necessary to determine the CBC seismic design category and site soil class for which each of the Project components must be designed. The geotechnical study shall identify the presence, if any, of potentially adverse soil conditions such as liquefiable soils, expansive soils, corrosive soils, and soils that may settle or experience hydrocompaction. Based on the nature, location and severity of adverse soil conditions, the geotechnical study shall recommend appropriate and feasible design features necessary to reduce the potential for liquefiable, expansive, corrosive or collapsible soils to adversely affect MSEP facilities. Such measures might include use of corrosion-resistant materials and coatings; use of non-corrosive, non-expansive backfills; use of cathodic protection systems; soil-treatment processes; redirection of surface water and drainage away from expansive foundation soils; and/or any other combination of soil preparation methods or foundation designs necessary to avoid or reduce the adverse affects of soils on Project structures.

Studies shall be carried out by a registered geologist or certified geotechnical engineer, and shall conform to industry standards of care and ASTM standards for field and laboratory testing. For completeness and direct correlation to the Proposed Action, the Applicant shall provide the geotechnical consultant with the most recent copy of the project case exhibit (tract map, parcel map, plot plan, etc.) for incorporation into the report. Furthermore, the consultant shall plot all appropriate geologic and geotechnical data on this case exhibit and include it as an appendix/figure/plate in their report. Study results and proposed solutions shall be provided for review and approval to the BLM at least 60 days before final Project design.

WATER-1: Stormwater Pollution Prevention Plan. This measure would reduce or avoid potentially adverse impacts with respect to stormwater pollution resulting from construction and decommissioning activities. See Section 4.20, *Water Resources*.

WATER-3: Comprehensive Drainage, Stormwater, and Sedimentation Control Plan. This measure would reduce the Project's effect on long-term erosion rates by implementing design measures to avoid increased stormwater flows or altered drainage patterns. See Section 4.20, *Water Resources*.

4.7.9 Residual Impacts after Mitigation Incorporated

Following implementation of the BMPs described in WATER-1 and WATER-3 and mitigation measures provided in Section 4.7.8, all adverse impacts on geology and soil resources resulting from construction, O&M, and decommissioning of the Project and alternatives would be avoided or substantially reduced.

4.8 Greenhouse Gas Emissions and Global Climate Change

4.8.1 Methodology for Analysis

Current climate science indicates that global atmospheric levels of GHGs affect climate change. The methodology to assess impacts related to GHG emissions and climate change under NEPA is continuing to evolve as consensus forms as to how best to evaluate such effects at both proposed action-specific and cumulative levels. The CEQ published draft guidance on February 18, 2010, for federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for federal actions under NEPA. For example, the CEQ proposes that agencies should consider the direct and indirect GHG emissions from a proposed action and its alternatives and quantify and disclose those emissions in the environmental document (40 CFR §1508.25). The CEQ further recommends that agencies consider mitigation measures to reduce proposed action-related GHG emissions from all phases and elements of the proposed action and alternatives over their expected life, subject to reasonable limits based on feasibility and practicality. This analysis follows these CEQ recommendations.

4.8.1.1 GHG Emissions

The majority of the technical information related to Project GHG emissions estimates was prepared by AECOM for the Applicant (AECOM, 2012) and peer reviewed by BLM staff and consultants. In addition, to supplement the technical GHG emissions information prepared by AECOM, ESA prepared indirect GHG emissions estimates for water usage during construction and operation and for electricity usage during construction (see Appendix H). The methods used to estimate Project construction and operation emissions are described below.

Construction Emissions

Off-road Equipment Exhaust

The combustion of fuel to provide power for the operation of various equipment results in the generation of GHGs. The CO_2 emissions from off-road equipment use were estimated using the same methodology described for criteria pollutants from construction equipment (see Section 4.2.1.1, *Construction Emissions*). The methodology employs the URBEMIS model, which calculates only CO_2 emissions. Emissions of N_2O and CH_4 were calculated outside of URBEMIS using the CO_2 emissions calculated by URBEMIS and CO_2, N_2O and CH_4 emission factors obtained from The Climate Registry (TCR) (2011) for diesel fuel combustion. Emission factors for CO_2 are in units of kilograms per gallon and emission factors for N_2O and CH_4 are provided in terms of grams per mile. These factors were converted to grams per gallon units by assuming a fuel efficiency of 20 miles per gallon for cars and light trucks and 8.0 miles per gallon for medium and heavy trucks. Emissions of N_2O and CH_4 were then calculated as a product of CO_2 emissions and the ratio of the N_2O or CH_4 emission factors to the CO_2 emission factor. N_2O and CH_4 emissions were multiplied by their respective global warming potentials and added to the CO_2 emissions to obtain CO_2e emissions. Details of the calculations, including a summary of

GHG emissions, are provided in Attachment 1-E of the technical report, *Summary of Construction GHG Emissions* (AECOM, 2012).

Vehicle Exhaust

GHG emissions from motor vehicles used during construction were estimated outside of URBEMIS using the same methodology described for criteria pollutants from construction vehicles (see Section 4.2.1.1, *Construction Emissions*). Since the EMFAC2007 model provides emission factors only for CO_2 emissions, emission factors for N_2O and CH_4 for different vehicle types were obtained from CARB's *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions*, Appendix A, Table 8. GHG emission factors were calculated as CO_2e in kilograms per mile by multiplying the N_2O and CH4 emission factors by their respective global warming potential and adding them to the CO_2 emission factors. CO_2e emission factors are provided in Attachment 1-C of the technical report, *Construction Vehicle Emissions*, Tables 1-A and 2 (AECOM, 2012). Monthly GHG emissions from vehicles used during different phases of construction are provided in the technical report Attachment 1-C, *Construction Vehicle Emissions*, Tables 3 through 8, and a summary of monthly GHG emissions from vehicles is provided in Table 2 of Attachment 1-E, *Summary of Construction GHG Emissions* (AECOM, 2012).

During construction, GHG emissions would be generated by motor vehicles within the MDAB (e.g., construction worker trips to and from the project site and deliveries of construction materials from points within the MDAB). It is currently undecided from where the PV panels would be obtained for the Project; for example, they could come from Arizona or be imported through the Port of Long Beach. In order to provide a conservative estimate of GHG emissions anywhere within California, GHG emissions outside of the MDAB were estimated based on an assumed round trip for delivery of PV panels from the Port of Long Beach. The GHG emissions due to these PV panel delivery trips were broken down into the round trip miles outside the MDAB from Long Beach to the MDAB boundary, and within the MDAB related to round trips from the boundary to the Project site. Vehicle miles traveled per vehicle type for each phase of construction were provided by the Applicant's engineering contractor and are included in the technical report Tables 5 through 10 of Attachment 1-E, *Summary of Construction GHG Emissions* (AECOM, 2012).

Indirect Emissions

To supplement the AECOM technical report, ESA prepared indirect emissions estimates for energy consumption that would be associated with the temporary electric distribution line that would be used at the solar plant site during construction (ESA, 2012). In addition, ESA estimated indirect GHG emissions that would be associated with water use for dust control and other construction activities that would be associated with construction of the Project using information identified in Sections 2.3.1.4.8, *Distribution Power Line*, and 2.3.1.4.9, *Water Supply and Usage*, and emission and use factors from the CEC and TCR (ESA, 2012; CEC, 2005; and TCR, 2011). Based on CEC use factors and the assumption that water would be obtained from wells at the Project site, it is estimated that 250 kWh of electricity would be required for every million gallons of water used.

Operation and Maintenance Emissions

Vehicle Exhaust

The CO_2 emissions from motor vehicles used during operation were estimated using the same methodology described above for GHG emissions from construction phase motor vehicles. Details of the calculation are provided in AECOM's technical report, Attachment 2-C, *Operation GHG* (AECOM, 2012).

Emergency Generator Exhaust

GHG emissions would be generated during the testing and maintenance of two on-site 35-horsepower diesel-powered emergency generators. GHG emissions from the diesel generators were calculated using the estimated annual fuel usage and emission factors obtained from The Climate Registry for diesel fuel combustion (TCR, 2011). Annual fuel usage is based on 50 hours per year of operation, the power rating of the diesel engines, and the brake-specific fuel consumption, heating value, and density of diesel. Details of the fuel usage calculations are provided in AECOM's technical report Attachment 2-A, *Operation Equipment* (AECOM, 2012).

Circuit Breaker Fugitive SF_6

Emissions of SF_6 could be released into the atmosphere due to equipment failure or leakage from electrical equipment such as circuit breakers that contain SF_6. The calculations for SF_6 emissions were based on the conservative assumptions that there would be two 230 kV circuit breakers and two 34.5 kV circuit breakers installed for each of the two proposed power units. The 230 kV breakers were assumed to contain 270 pounds of SF_6, while the 34.5 kV breakers were assumed to contain approximately 100 pounds of SF_6. The AECOM technical report indicates that each of the circuit breakers would be hermetically sealed to prevent the escape of SF_6 into the atmosphere (AECOM, 2012). It should be noted that emissions of SF_6 from a hermetically sealed circuit breaker can only occur due to equipment failure as there is no ability for the user to refill or extract SF_6 due to the factory seal. CARB defines hermetically sealed circuit breakers as "designed to be gas-tight and sealed for life" (CARB, 2011). Nonetheless, an assumed leak rate of 0.5 percent was used for estimates to provide a conservative upper bound estimate of fugitive SF_6. It was also assumed that SF_6 is weighted at a global warming potential of 23,900 based on a 100-year time horizon, which is consistent with state, federal, and international standards. Details of the fugitive SF_6 calculation are provided in AECOM's technical report Attachment 2-D, *Operation GHG* (AECOM, 2012).

Indirect Emissions

Electric power would be drawn from the grid for day-to-day operation of the facility including the on-site operations and maintenance building and other Project components. GHG emissions from electricity use were estimated by multiplying the expected annual electricity consumption provided by the Applicant's engineering consultant by the CO_2, N_2O, and CH_4 emission factors obtained from TCR (TCR, 2011). N_2O and CH_4 emissions were multiplied by their respective global warming potential and added to the CO_2 emissions to obtain CO_2e emissions. Details of the electricity use indirect emissions calculation are provided in AECOM's technical report, Attachment 2-D, *Operation GHG* (AECOM, 2012). In addition, ESA estimated indirect GHG emissions that would be associated with operation and maintenance water use for panel washing and other activities that would be associated with the Project using information identified in Section 2.3.1.4.9, *Water Supply and Use*, and emission and use factors from the CEC and TCR (ESA, 2012; CEC, 2005; and TCR, 2011). As discussed under the methods for indirect emissions during construction, it is estimated that 250 kWh of electricity would be required for every million gallons of water used.

Carbon Sequestration

The rate of existing carbon sequestration that occurs at the Project site has been estimated under the assumption that the ongoing natural carbon uptake by desert vegetation is equivalent to 1.48 metric tons of CO_2 per acre per year (see Section 3.8.1.2, *Greenhouse Gases*). This rate of carbon uptake is based on a study of Mojave Desert vegetation (Wohlfahrt et al., 2008). The acreage of desert vegetation that would be disturbed by the Project and alternatives were obtained from Section 4.3, *Biological Resources – Vegetation*.

Fossil Fuel-Based Energy Displacement

The reduction in GHG emissions by electricity displacement was estimated by assuming that the solar power would displace electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the Project would have a generation capacity factor of 26 percent for an average daily generation period of approximately 6 hours. A natural gas heat rate of 6,940 British thermal units per kilowatt hour (BTU/kWh) for energy generation by combined-cycle power plants and emission factors from TCR were used to estimate the displaced emissions. Details of the fossil fuel-based energy displacement emissions calculation are provided in AECOM's technical report Attachment 2-D, *Operation-Related GHG Emissions*, Table 4 (AECOM, 2012).

4.8.1.2 GHG Emissions Impact Analysis

Independent of NEPA, but pursuant to 40 CFR Part 98, *Mandatory Reporting of Greenhouse Gases Rule*, USEPA requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (USEPA, 2011b). In addition, pursuant to 40 CFR Part 52, *Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule*, the USEPA recently mandated to apply PSD and Title V requirements to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year (USEPA, 2011a). For the purposes of this NEPA analysis, estimated GHG emissions for the Project and alternatives are compared to the federal GHG mandatory emissions reporting threshold of 25,000 metric tons per year to determine whether the GHG emissions would contribute substantially to global climate change.

4.8.1.3 Climate Change

Agencies under the DOI are required by Secretarial Order No. 3289 (September 14, 2009) to consider potential impacts associated with climate change, including potential changes in flood risk, water supply, sea level rise, wildlife habitat and migratory patterns, invasion of exotic species, and potential increases in wildfires. In addition, climate change is expected to result in a suite of additional potential changes that could affect the natural environment, in a manner that is relevant to the Project. The potential for climate change to affect the Project is discussed qualitatively.

4.8.2 Applicant Proposed Measures

There are no APMs to address potential effects from GHGs and climate change.

4.8.3 Alternative 1: Proposed Action

4.8.3.1 Direct and Indirect GHG Emissions Impacts

Construction

Table 4.8-1 shows the GHG emissions estimated to be generated by Project construction activities for each calendar year during the Project's 46-month construction period. As noted in Section 4.8.1, *Methodology for Analysis*, the GHG equipment and vehicle exhaust emissions estimates include those that would be generated within the MDAB (e.g., on-site emissions generated at the solar plant site) as well as those that would be outside of the MDAB but within California (e.g., delivery of PV panels from Port of Long Beach). As shown in Table 4.8-1, Project-related annual CO_2e construction emissions would vary between 2,315 metric tons and 4,130 metric tons, and over the 46-month construction period, the Project would generate a total of 12,703 metric tons CO_2e. Refer to Section 4.8.1, *Methodology for Analysis*, for a discussion of the methods used to estimate each of the construction emissions sources.

TABLE 4.8-1
PROPOSED ACTION CONSTRUCTION EQUIPMENT AND VEHICLE GHG EXHAUST EMISSIONS

	Annual CO_2e Emissions (metric tons)[a]		
Construction Year	**Equipment and Vehicle Exhaust**	**Indirect Electricity and Water Use**	**Total Emissions**
Year 2013	2,307	8	2,315
Year 2014	3,127	8	3,135
Year 2015	3,116	7	3,123
Year 2016	4,122	8	4,130
Total Project	**12,672**	**31**	**12,703**

NOTE:

[a] Emissions associated with equipment and vehicle exhaust were estimated by AECOM (2012) and indirect emissions associated with electricity and water use were estimated by ESA (2012).

SOURCES: AECOM, 2012 and ESA, 2012.

Operation and Maintenance

Direct and Indirect Emissions

Table 4.8-2 shows the estimated annual GHG emissions that would be directly and indirectly generated each year related to operation and maintenance of the Project for fossil fuel combustion sources, fugitive SF_6 emission sources, and indirect emissions related to electricity and water usage. The total estimated annual operation and maintenance emissions that would be associated

TABLE 4.8-2
PROPOSED ACTION ANNUAL GHG EMISSIONS FROM OPERATIONS

Operational Sources[a]	Annual CO_2e Emissions (metric tons)
Fossil Fuel Combustion	112
Fugitive SF_6 Emissions	80
Indirect Emissions – Electricity and Water Use	25
Total Annual Operation GHG	**217**

NOTE:

[a] Emissions associated with fossil fuel combustion, fugitive SF_6, and indirect emissions associated with electricity use were estimated by AECOM (2012) and indirect emissions associated with electricity for water use was estimated by ESA (2012).

SOURCES: AECOM, 2012; ESA, 2012.

with the Project is 217 metric tons CO_2e. For a discussion of the methods used to estimate each of the operation and maintenance emissions sources, see Section 4.8.1, *Methodology for Analysis*.

Carbon Sequestration

In addition to direct and indirect emissions of GHGs, the Project would result in the clearing of land and complete removal of vegetation over most of the Project site. This would reduce the ongoing natural carbon uptake by vegetation. As discussed in Section 3.8.1.2, *Greenhouse Gases*, a study of desert vegetation indicates that the desert may uptake carbon in amounts equivalent to 1.48 metric tons of CO_2 per acre per year. As indicated in Section 4.3, *Biological Resources – Vegetation*, the Project would disturb approximately 4,583 acres of vegetation. Based on these assumptions, the maximum carbon uptake expressed as CO_2 that would be eliminated as result of Project-related ground disturbance would be about 6,780 metric tons of CO_2 per year. It should be noted that other studies suggest that Wohlfahrt's (2008) estimate of carbon uptake by desert vegetation such as that found on-site may be too high; therefore, this analysis represents a conservative estimate of the Project's potential effects with regard to the loss of carbon sequestration.

Displacement of GHGs

The proposed renewable source of energy that would be associated with the Project could displace electricity generated by fossil fuel combustion with lower GHG-emitting electricity for consumers. The reduction in GHG emissions by electricity displacement was estimated under the assumption that the solar power would displace electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the Project has a capacity factor of 26 percent. Assuming that the renewable energy produced by the Project would displace gas-fired generation, the Project would displace an estimated 639,061 metric tons CO_2e annually (AECOM, 2012).

Decommissioning

At the end of the 30-year term of the BLM ROW grant, Project operation and maintenance would cease and associated facilities would be decommissioned and dismantled, and the site would be restored over a period of approximately 24 months. Decommissioning activities could generate temporary annual emissions of GHG similar to those that would occur annually during construction of the Project (see above).

Impact Summary

This analysis compares Project emissions, including the total construction and decommissioning GHG emissions amortized over 30 years and added to the operation and maintenance emissions, to the USEPA's GHG mandatory emissions reporting threshold of 25,000 metric tons per year. As shown in Table 4.8-3, the sum of annual operation GHG emissions (including direct and indirect emissions and accounting for the potential reduction in carbon sequestration) and the amortized construction and decommissioning GHG emissions would be up to 8,645 tons (7,843 metric tons) CO_2e per year, which would be below the USEPA's GHG mandatory emissions reporting threshold and therefore is not expected to contribute significantly to climate change through the emission of GHGs.

TABLE 4.8-3
PROPOSED ACTION TOTAL ANNUAL AMORTIZED GHG EMISSIONS

	Annual CO_2e Emissions	
Emission Sources	**tons**	**metric tons**
30-year Amortized Construction Emissions	466	423
Total Direct and Indirect Annual Operation Emissions	239	217
Reduction in Carbon Sequestration During Operation	7,474	6,780
30-year Amortized Decommissioning Emissions	466	423
Amortized Construction + Annual Operation	**8,645**	**7,843**

SOURCES: AECOM, 2012; ESA, 2012.

In addition, assuming that at full build-out the Project would produce approximately 1,708,200 MWh of electricity per year that would displace the generation of electricity from natural gas-fired combined-cycle power plants, the Project would displace an estimated 639,061 metric tons of CO_2e annually, resulting in a net reduction of 631,218 metric tons CO_2e per year.

4.8.3.2 Climate Change Effects on the Project

Climate change is expected to result in a suite of potential changes that could affect the natural environment in a manner that is relevant to the Project. The potential for climate change effects on the Project is discussed below.

Hydrologic Resources

In California and much of the western U.S., climate change is expected to result in several potential effects related to water resources. These include potential sea level rise, potential changes to snowpack and snowmelt periods, changes to the water flow available to dilute wastewater, changes to water temperature, changes in the frequency of flooding and droughts, and potential reductions in surface water supply (DWR, 2008, 2011).

Sea Level Rise

Sea level rise is expected to occur as a result of increased global temperatures (USEPA, 2011c). Increased global temperatures include increases in ocean temperature as well as air temperature. As water temperature increases, the water contained in the world's oceans would undergo thermal expansion. Increased ocean and air temperatures could also result in a net melting/reduction in the extent of polar ice sheets. These effects could result in an increase in the average level of the world's oceans of 7.2 to 23.6 inches (18 to 59 cm) by 210, as estimated by the IPCC (USEPA, 2011c). The IPCC also reports that sea level has risen worldwide approximately 4.8 to 8.8 inches (12 to 22 cm) during the last century (USEPA, 2011d). However, these potential effects are not expected to affect the Project, which would be located approximately 140 miles from the ocean, and at an elevation of at least 450 feet amsl.

Snowpack and Snowmelt Period

Changes in snowpack and the snowmelt period are anticipated in California as a result of climate change (DWR, 2008, 2011). Similar effects are anticipated in the Colorado River system, which includes the PVMBG that exists at the Project site (see Sections 3.20 and 4.20, *Water Resources*, for additional discussion). Specifically, climate change is expected to result in generally warmer temperatures, which in turn would result in a greater proportion of total annual precipitation falling as rain. Snowpack in California and the Colorado River watershed serves as a temporary means of water storage, wherein water is released slowly and into the early summer during snowmelt. If a greater proportion of precipitation falls as rain, the snowpack would be reduced, and the potential for water storage within the snowpack would also be reduced. Also, warmer temperatures would cause earlier snowmelt events, potentially reducing the ability of water managers to capture snow melt in reservoirs. However, there is no snowpack in the vicinity of the Project, and the Project would not be dependent on snowmelt water for water supply because the PVMGB does not receive recharge water from snowmelt.

Dilution

Dilution refers to the amount of water that is available in a receiving water body into which wastewater is discharged. Under some circumstances, climate change could result in a change in the volume or timing of water flows that are available in streams for dilution of wastewater (Kundzewicz et al., 2007). However, because the Project would not discharge wastewater to surface waters (a septic system would be included for on-site wastewater, and process water would be controlled on-site via an evaporation pond system), potential climate-related changes in dilution capacity would not affect the Project.

Water Temperature

Water temperature can be critical to fisheries resources in parts of California, in particular along those waterways that support cold water fisheries. The only perennial waterway in the vicinity of the Project is the Colorado River. Some fish may be present in the agricultural canals and drainages operated by PVID; however, due to the agricultural and intermittent nature of these facilities, they are not generally considered to be quality fish habitat. Because the site eventually drains into the Colorado River, climate-induced increases in air and surface temperature at the site could potentially result in elevated water temperatures in drainage from the site. This could in turn increase water temperatures in the Colorado River. However, such potential for increases in temperature would occur whether or not the Project is implemented, and these changes would not affect Project operation. Additionally, the Project would not draw water from the Colorado River. Therefore, any change in Colorado River temperature that could occur as a result of climate change would not affect the Project.

Flooding, Drainage, and Erosion

Climate change is anticipated to affect the frequency and intensity of extreme weather events, including large storm events and droughts in western watersheds, such as the Colorado River basin where the Project is located (DWR, 2008, 2011; Garfin, 2005). Although the degree of change is a subject of substantial debate, most investigations concur that the Colorado River watershed, including the Project site and its vicinity, would experience an increase in the frequency and intensity of high rainfall and flood events (Christensen et al., 2004; Christensen and Lettenmaier, 2006; Cooley et al, 2009; Mote, 2007). This could result in an increase in potential stormwater runoff and flooding, and an increase in erosion and sedimentation on-site and downstream from the site. Increases in the intensity or frequency of droughts are discussed in terms of water resources availability, below.

As discussed in Section 4.20, Water Resources, the Project would manage stormwater drainage by allowing washes to inundate much of the proposed solar field and associated facilities. Flows would not be re-routed. Also discussed in Section 4.20, the Project would be designed to account for stormwater drainage and flood flows pursuant to Mitigation Measures WATER-2 through WATER-4. These measures would not, however, account for the potential increases in stormwater and flood flows that could result from climate change, which could result in increased erosion, sedimentation, and flooding on-site and downstream. Therefore, implementation of Mitigation Measure CLIMATE-1 would be required to ensure that the application of Mitigation Measures WATER-2 through WATER-4 account for potential increases in flows associated with the indirect effects of climate change.

Water Resources Availability

As discussed in *Water Resources* Sections 3.20 and 4.20, the Project site and immediate vicinity contain only ephemeral drainages and washes. Surface waters in the Project area and its immediate vicinity occur only during substantial precipitation events, when surface runoff occurs. There are no perennial streams or other perennial waterways located on site. While the Colorado River is a perennial river located downstream of the Project, the Project would not rely on surface water for water supply during construction or operation. Instead, the Project would rely on groundwater for water supply during both construction and operation.

Estimates of the potential effects of climate change on the frequency and amount of rainfall in the west vary; however, most studies concur that in the desert southwest, some degree of reduction of precipitation would occur. Seager et al. (2007) and Christensen et al. (2004) completed extensive reviews and modeling of potential climate change effects on the Colorado River watershed and other southwestern watersheds, including several climate change scenarios. The authors concluded that precipitation and runoff within the watershed could generally decrease, while periods of drought could increase, resulting in an overall reduction in the availability of water along the Colorado River. These scenarios could result in moderate to substantial effects on water supply availability, and could affect the ability of water rights holders along the Colorado River to divert their full entitlements.

In the event that climate change results in reduced precipitation within the Project area and its vicinity, some degree of associated reduction in groundwater recharge from rainfall could occur. This situation would not result in increased water requirements by the Project, and would not result in additional groundwater pumping during Project construction or operations. Therefore, even with potential reductions in total precipitation volume associated with future climate change, no increase in pumping would be required as a result of the effects of climate change.

Biological Resources

Biological resources could be affected as a result of climate change in California. Distribution patterns of species are generally expected to shift according to regional changes in temperature and precipitation, while the location of wildlife migration corridors and the extent of invasive species also could be altered (USFWS, 2010, 2011).

Fisheries

The Project would not contain any perennial or other surface waters that contain fisheries resources, and would not affect or be affected by changes in fisheries characteristics.

Habitat Values of Mitigation Lands

As discussed in Sections 4.3, *Biological Resources – Vegetation* and 4.4, *Biological Resources – Wildlife*, implementation of the Project would require mitigation for biological resources values that would be lost as a result of implementation of the Project. The proposed mitigation lands would be required to be equivalent in terms of habitat value and at replacement ratios as specified in Sections 4.3 and 4.4. Climate change could result in adverse effects on biological resources located on these mitigation lands. However, given that mitigation lands must be similar in biological resources value as compared to lost resources on site, it is anticipated that climate-related effects for the mitigation lands would be similar to those located at the Project site, if the Project were not built. Therefore, potential reductions in the biological resources values of mitigation land values resulting from climate change are expected to be similar to on-site conditions in the absence of the Project.

Hazards

Heat-related hazards, including potential increases in wildland fire and heat waves, could be exacerbated by climate change (IPCC, 2007; ISDR, 2008).

Wildland Fire Risks

Potential risks associated with wildland fire are discussed in Section 4.21, *Wildland Fire Ecology*. As described in Section 4.21, during operation and maintenance of the Project, fire protection systems for the solar plant site would include a fire protection water system for protection of the

O&M building, including a maximum of 4 hydrants connected into an up to 1,500 gallon per minute fire line, and portable fire extinguishers. The fire protection water system would be supplied from a 15,000-gallon raw and fire water storage tank located on the solar plant site near the O&M area. In addition, Section 4.21 recommends implementation of Mitigation Measure FIRE-1, which would require the preparation and implementation of a Fire Safety Plan to ensure the safety of workers and the public during Project construction, operation and maintenance, and decommissioning activities.

Climate change generally would result in a small increase in temperature, and also could result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves (IPCC, 2007; ISDR, 2008) during operation of the Project. In compliance with applicable regulations and mitigation proposed in Section 4.21, the Applicant would be required to install fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. Although the risk of wildfire that could affect the site could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations and mitigation specified in Section 4.21. Therefore, no additional mitigation is recommended.

Heat Waves

The frequency of occurrence and the severity of heat waves could increase as a result of climate change (IPCC, 2007; ISDR, 2008). Heat waves could result in increased potential risk to Project employees. However, the Project would be required to meet state requirements for worker safety associated with heat stress. No further actions are recommended.

Other Issues

In addition to the issues discussed above, potential climate change-related impacts associated with soil moisture and fugitive dust concentrations also could have effects on the Project site.

Soil Moisture

As discussed in Sections 3.7 and 4.7, *Geology and Soils Resources*, almost all rainfall that occurs in this region of California is lost through evaporation and evapotranspiration. Soil moisture at the Project site is characteristically low. Although precise changes are impossible to predict, climate change could result in increases in extreme weather events, including droughts and heat waves, and an overall reduction in precipitation. These conditions could result in a concurrent reduction in soil moisture content at the site and regionally. However, reductions in soil moisture content would not affect Project-related operations, and would not require any change in water resources usage. Additionally, the proposed facilities would in no way support additional drying of soils on site, or otherwise exacerbate potential changes in soil moisture associated with climate change.

Fugitive Dust

As discussed in Section 4.2, *Air Resources*, the permanent disturbance of desert pavement and resultant fugitive dust emissions would require mitigation during operation of the Project.

Mitigation Measure AQ-2 would mitigate operation period fugitive dust emissions to ensure compliance with state and federal regulations and requirements. Although climate change could result in some degree of reduction of soil moisture, as discussed above, soil moisture is already very low under current conditions. Any further reductions in soil moisture would be inconsequential in terms of the absolute amount of water contained in on-site soils. Therefore, any potential further reductions in soil moisture associated with climate change are not anticipated to result in a substantial increase in fugitive dust emissions, and Mitigation Measure AQ-2 would be sufficient to meet federal and state requirements regarding fugitive dust.

4.8.4 Alternative 2: Reduced Acreage

4.8.4.1 Direct and Indirect GHG Emissions Impacts

Construction

The annual criteria pollutant emissions that would be generated within the MDAB during each calendar year during the 24 months of construction for Alternative 2 have been estimated using the methodologies described in Section 4.8.1, *Methodology for Analysis*. For the purposes of this analysis, it is assumed that construction activities for Alternative 2 would begin in March 2013, and conclude in February 2015. As shown in Table 4.8-4, the annual emissions for 2013 and 2014 would be the same as for the Proposed Action; however, emissions for 2015 would be considerably less under Alternative 2 given that there would only be 2 months of active construction during that year. Annual CO_2e construction emissions under Alternative 2 would vary between 351 metric tons and 3,135 metric tons, and over the 24-month construction period, Alternative 2 would generate a total of 5,801 metric tons CO_2e.

TABLE 4.8-4
ALTERNATIVE 2 CONSTRUCTION EQUIPMENT AND VEHICLE GHG EXHAUST EMISSIONS

	Annual CO_2e Emissions (metric tons)		
Construction Year	**Equipment and Vehicle Exhaust**	**Indirect Electricity and Water Use**	**Total Emissions**
Year 2013	2,307	8	2,315
Year 2014	3,127	8	3,135
Year 2015	350	2	351
Total Project	**5,784**	**18**	**5,801**

NOTE:

* Emissions associated with equipment and vehicle exhaust were estimated by AECOM (2012) and indirect emissions associated with electricity and water use were estimated by ESA (2012).

SOURCES: AECOM, 2012 and ESA, 2012.

Operation and Maintenance

Direct and Indirect Emissions

The annual GHG emissions that would be associated with Alternative 2 would be approximately half of the emissions presented for the Proposed Action. Table 4.8-5 shows the estimated annual GHG emissions that would be directly and indirectly generated each year related to operation and maintenance of Alternative 2 for fossil fuel combustion sources, fugitive SF_6 emissions sources, and indirect emissions related to electricity and water usage. The total estimated annual operation and maintenance emissions that would be associated with Alternative 2 is 109 metric tons CO_2e.

TABLE 4.8-5
ALTERNATIVE 2 ANNUAL GHG EMISSIONS FROM OPERATIONS

Operational sources[a]	Annual CO_2e Emissions (metric tons)
Fossil Fuel Combustion	56
Fugitive SF_6 Emissions	40
Indirect Emissions – Electricity and Water Use	13
Total Annual Operation GHG	**109**

NOTE:

[a] Emissions associated with fossil fuel combustion, fugitive SF_6, and indirect emissions associated with electricity use were estimated based on AECOM (2012) and indirect emissions associated with electricity for water use was estimated based on ESA (2012).

SOURCES: Based on AECOM, 2012; ESA, 2012.

Carbon Sequestration

In addition to direct and indirect emissions of GHGs, Alternative 2 would result in the clearing of land and complete removal of vegetation over an area of approximately 2,266.3 acres. This would reduce the ongoing natural carbon uptake by vegetation. As discussed in Section 3.8.1.2, *Greenhouse Gases*, a study of desert vegetation indicates that the desert may uptake carbon in amounts equivalent to 1.48 metric tons of CO_2 per acre per year. Based on these assumptions, the maximum carbon uptake expressed as CO_2 that would be eliminated as result of ground disturbance under Alternative 2 would be about 3,355 metric tons of CO_2 per year.

Displacement of GHGs

The proposed renewable source of energy that would be associated with the 250 MW solar plant under Alternative 2 could displace electricity generated by fossil fuel combustion with lower GHG-emitting electricity for consumers. The reduction in GHG emissions by electricity displacement was estimated under the assumption that the solar power would displace electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the solar plant would have a capacity factor of 26 percent. Assuming that the renewable energy produced by Alternative 2 would displace gas-fired generation, implementation of Alternative 2 would displace an estimated 213,020 metric tons CO_2e annually (ESA, 2012).

Decommissioning

At the end of the 30-year term of the BLM ROW grant, operation and maintenance of Alternative 2 would cease and associated facilities would be decommissioned and dismantled, and the site would be restored. Decommissioning activities could generate temporary emissions of GHG similar to those that would occur during construction of Alternative 2 (see above).

Impact Summary

For a conservative analysis, this discussion compares emissions under Alternative 2, including the total construction and decommissioning GHG emissions amortized over 30 years and added to the operation and maintenance emissions, to the USEPA's GHG mandatory emissions reporting threshold of 25,000 metric tons per year. As shown in Table 4.8-6, the sum of annual operation GHG emissions (including direct and indirect emissions and accounting for the potential reduction in carbon sequestration) and the amortized construction and decommissioning GHG emissions would be up to 4,244 tons (3,850 metric tons) CO_2e per year, which would be a little less than half of the total annual amortized emissions under the Proposed Action. This emission level would be below the USEPA's GHG mandatory emissions reporting threshold. Therefore, Alternative 2 is not expected to contribute significantly to climate change through the emission of GHGs.

In addition, assuming that at full build-out Alternative 2 would produce approximately 569,400 MWh of electricity per year that would displace the generation of electricity from natural gas-fired combined-cycle power plants, Alternative 2 would displace an estimated 213,020 metric tons of CO_2e annually, resulting in a net reduction of 209,170 metric tons CO_2e per year, which would be approximately one-third of the net reduction that would occur under the Proposed Action. When considering the net GHG emissions that would be associated with Alternative 2, there would be no adverse effects related to the generation of GHG emissions.

TABLE 4.8-6
ALTERNATIVE 2 TOTAL ANNUAL AMORTIZED GHG EMISSIONS

	Annual CO_2e Emissions	
Emission Sources	**tons**	**metric tons**
30-year Amortized Construction Emissions	213	193
Total Direct and Indirect Annual Operation Emissions	120	109
Reduction in Carbon Sequestration During Operation	3,698	3,355
30-year Amortized Decommissioning Emissions	213	193
Amortized Construction + Annual Operation	**4,244**	**3,850**

SOURCES: based on AECOM, 2012; ESA, 2012.

4.8.4.2 Climate Change Effects on Alternative 2

Potential climate change effects on Alternative 2 would be the same as those discussed for the Proposed Action, except that the area affected by Alternative 2 would be reduced. Implementation of Mitigation Measure CLIMATE-1 would be required.

4.8.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.8.5.1 Central Route

Direct and Indirect GHG Emissions Impacts

The Central Route would be a total of approximately 12.5 miles long. This is approximately 86 percent of the length of gen-tie that would be constructed under the Proposed Action. Given the shorter overall length, the Central Route would take approximately 1 month fewer to construct. For purposes of this analysis, it is assumed that construction activities associated with the Proposed Action gen-tie line (i.e., the Eastern Route) would occur during construction Month 6 (August 2013) through Month 13 (March 2014). Therefore, the total annual GHG emissions associated with the Central Route would include one fewer month of transmission line construction work in 2014 compared to the Proposed Action. This would equal approximately 44 fewer metric tons CO_2e for construction year 2014 and approximately 3 fewer amortized metric tons of CO_2e compared to the emissions presented for the Proposed Action (see Tables 4.8-1 and 4.8-3).

Operation and maintenance of the Central Route would be substantially the same as those for the Eastern Route under the Proposed Action.

At the end of the 30-year term of the BLM ROW grant, operation and maintenance of the Central Route would cease and associated facilities would be decommissioned and dismantled, and the ROW would be restored. Decommissioning activities could generate temporary emissions of GHG similar to those that would occur during construction of the Central Route (see above).

The Central Route would disturb approximately 70 acres of vegetation, and the maximum carbon uptake expressed as CO_2 that would be eliminated as result of this disturbance would be 104 metric tons per year, compared to 204 metric tons per year for the Eastern Route proposed as part of Alternative 1.

In summary, the total amortized annual CO_2e emissions under the Central Route would be lower by 106 metric tons per year, including amortized construction and decommissioning emissions, and would not cause the Project to exceed USEPA's GHG mandatory emissions reporting threshold when combined with either the Alternative 1 or Alternative 2 solar plant site.

Climate Change Effects on the Central Route

Potential climate change effects on the Central Route would be substantially the same as those discussed for the Proposed Action. Implementation of Mitigation Measure CLIMATE-1 would be required.

4.8.5.2 Western Route

Direct and Indirect GHG Emissions Impacts

The Western Route would be a total of approximately 15.5 miles long. This is approximately 10 percent longer than what would be constructed under the Proposed Action. Given the longer overall length, the Western Route would take approximately 1 month more to construct. For the purposes of this analysis, it is assumed that construction activities associated with the proposed Eastern Route would occur during construction Month 6 (August 2013) through Month 13 (March 2014). Therefore, the total annual GHG emissions associated with the Western Route would include one additional month of transmission line construction work in 2014 compared to the Proposed Action. This would equal approximately 44 additional metric tons CO_2e for construction year 2014 and approximately 3 additional amortized metric tons of CO_2e compared to the emissions presented for the Proposed Action (see Tables 4.8-1 and 4.8-3).

Operation and maintenance of the Western Route would be substantially the same as those for the Eastern Route under the Proposed Action.

At the end of the 30-year term of the BLM ROW grant, operation and maintenance of the Western Route would cease and associated facilities would be decommissioned and dismantled, and the ROW would be restored. Decommissioning activities could generate temporary emissions of GHG similar to those that would occur during construction of the Western Route (see above).

The Western Route would disturb approximately 183 acres of vegetation, and the maximum carbon uptake expressed as CO_2 that would be eliminated as result of this disturbance would be 271 metric tons, compared to 204 metric tons for the Eastern Route proposed as part of Alternative 1.

In summary, total emissions of CO_2e under the Western Route would be greater by 73 metric tons per year, including amortized construction and decommissioning emissions, but would not cause the Project to exceed USEPA's GHG mandatory emissions reporting threshold when combined with either the Alternative 1 or Alternative 2 solar plant site.

Climate Change Effects on the Western Route

Potential climate change effects on the Western Route would be substantially the same as those discussed for the Proposed Action. Implementation of Mitigation Measure CLIMATE-1 would be required.

4.8.6 Alternative 4: No Action Alternative

4.8.6.1 Direct and Indirect GHG Emissions Impacts

Under Alternative 4, none of the GHG emissions-related impacts of the Proposed Action would occur. Therefore, the No Action Alternative would have no impact with respect to GHG emissions. However, Alternative 4 would not displace the generation of GHG emissions from existing natural gas-fired combined-cycle power plants and would result in the continued long-term adverse impact associated with annual GHG emissions compared to implementation of the Proposed Action.

4.8.6.2 Climate Change Effects on Alternative 4

The potential indirect effects of climate change on surrounding areas would still occur under Alternative 4 because such climate change effects are anticipated regardless of whether a solar energy project is implemented. However, under Alternative 4 there would be no MSEP-specific facilities to affect because no such facilities would be constructed or operated.

4.8.7 Cumulative Impacts

4.8.7.1 GHG Emissions

GHG emissions are inherently a cumulative concern because it is the accumulation of global GHG emissions in the atmosphere that results in global climate change; therefore, the geographic scope of cumulative impacts related to GHG emissions and climate change is global. The Project would result in short-term GHG emissions during construction and decommissioning, limited long-term GHG emissions during operations and maintenance, and would result in a long-term reduction of carbon sequestration at the site. However, the Project could result in a long-term net reduction of approximately 631,218 metric tons of CO_2e per year by displacing electricity from fossil fuel-fired power plants, and therefore would not conflict with the state's GHG reduction goals. Virtually all of the cumulative projects described in Section 4.1.5, *Cumulative Scenario Approach*, could contribute to global warming due to the generation of short-term and/or long-term GHG emissions. However, similar to the Project, the renewable energy cumulative projects could result in long-term decreases in GHG emissions by displacing electricity from fossil fuel-fired power plants.

4.8.7.2 Climate Change Impact on the Project

Climate change, which itself is a cumulative impact associated with the global increase of GHG emissions, is expected to result in a suite of potential changes that could affect the natural environment in a manner that is relevant to the Project. The climate change impacts on the Project described in Section 4.8.3.2 would be the result of cumulative contributions to global GHG emissions over a time horizon of approximately the 30-year term of the BLM ROW grant.

4.8.8 Mitigation Measures

GHG-1: All SF_6-containing circuit breakers that will be installed for each power unit shall be hermetically sealed.

CLIMATE-1: In order to ensure that on site facilities are protected from increased intensity stormwater flows and flood flows that could occur as a result of climate change, the application of Mitigation Measures WATER-2, WATER-3, and WATER-4 shall account for potential increases in flows associated with the indirect effects of climate change. Specifically, the proposed mitigation measures shall require implemented design features and management practices that account for a climate-related increase in potential maximum flow volumes of at least 20 percent. All flood control and stormwater management facilities shall be designed accordingly.

4.8.9 Residual Impacts after Mitigation Incorporated

There would still be GHG emissions after mitigation has been incorporated; however, they would not be a substantial contribution to climate change.

4.9 Hazards and Hazardous Materials

4.9.1 Methodology for Analysis

This analysis of potential impacts of the Proposed Action and Alternatives related to Hazards and Hazardous Materials focuses on possible impacts to the health and safety of the public. Impacts are identified and evaluated based on relevant BLM standards, policies, and guidelines. Studies and other information provided by the Applicant also were reviewed, including the following:

1. Tetra Tech EC, Inc., 2011. *Phase I Environmental Site Assessment*, *McCoy Solar Energy Project, Riverside County, CA* (January, 2011).

2. Information regarding hazardous materials use and health and safety practices for the Proposed Action.

4.9.1.1 Risk of Accidents and Spills

This analysis reviews and assesses the potential for the transportation, storage, and use of hazardous materials to affect the surrounding community. It is recognized that some hazardous materials must be used for Project construction and operation; all chemicals identified in connection with the MSEP are evaluated. In order to assess the potential for a release of hazardous materials to affect the public or the environment, this analysis examines the type and quantity of hazardous materials to be used, the manner in which the Applicant would handle, store, and dispose of hazardous materials and hazardous wastes, and the transportation of hazardous materials to and from the facility.

Engineering and administrative controls concerning hazardous materials use are included as part of the Proposed Action and Alternatives. Engineering controls are the physical or mechanical systems that can prevent the spill of hazardous material from occurring, or that can either limit the amount of a spill or to a confined area. Examples of engineering controls are storage tanks and secondary containment basins. Administrative controls are the rules and procedures that workers at the facility must follow that would help to prevent accidents or to minimize releases if they do occur. These procedures typically are established in worker safety training and emergency response plans. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off-site and from causing harm to the public or the environment.

This analysis reviews and evaluates the Applicant's proposed use of hazardous materials as described by the Applicant. In conducting this analysis, these three steps were followed:

Step 1: Review the types and quantities of hazardous materials proposed for on-site use as listed in the Plan of Development and other information provided by the Applicant.

Step 2: Review and evaluate the engineering and administrative controls proposed by the Applicant to prevent spills and respond to accidents.

Step 3: Analyze the theoretical impacts on the public of a greatest-consequence spill of hazardous materials, as reduced by the engineering and administrative controls proposed by the Applicant. When such controls would be sufficient, no further mitigation is recommended. If additional mitigation measures would further reduce or avoid impacts of the Proposed Action or an Alternative, additional prevention and response controls are proposed.

4.9.1.2 Emergency Response

This analysis assesses potential impacts to public safety that could result if the Proposed Action or an Alternative impaired implementation of an emergency response or evacuation plan. This assessment first determines whether local emergency response or evacuation plans have been adopted and then whether the Proposed Action or an Alternative would impede emergency evacuation routes or emergency response actions.

4.9.1.3 Aircraft Operations

Research on the presence of public and private airports within the vicinity of the Project, FAA regulations, and review of the Riverside County ALUCP for the Blythe Airport was conducted to evaluate whether the Proposed Action or an Alternative would adversely affect commercial, military, or personal air navigation safety.

4.9.1.4 Intentionally Destructive Acts

Intentionally destructive acts could include, for example, malicious mischief, vandalism, or domestic or foreign terrorist attacks. This analysis of impacts related to intentionally destructive acts is based on the screening criteria for vulnerability assessments of chemical facilities and electric power infrastructure and assesses the following questions: Is the Project a critical electric infrastructure facility? Does the facility use any of the chemicals on the list of regulated substances in 40 CFR §68.130? What would be the estimated severity of impact from a release of hazardous materials from the site or from power disruption?

4.9.1.5 Abandoned Mined Lands

As discussed in Section 3.9.1.6, there are no abandoned mined lands identified on the MSEP or alternative sites. Therefore, the Proposed Action and alternatives would result in no impacts related to abandoned mined lands.

4.9.2 Applicant Proposed Measures

There are no APMs to address potential effects from hazards and hazardous materials.

4.9.3 Alternative 1: Proposed Action

4.9.3.1 Direct and Indirect Impacts

Aircraft Operations

Approximately 7.9 miles of the proposed gen-tie line would be located within the Blythe Airport Influence Area in Airport Compatibility Zones C, D, and E, with about 1,500 feet in Zone C. Because gen-tie line support poles would be spaced 800 feet apart, approximately 52 poles with heights from 70 to 145 feet would be located within these airport zones. For structures on private land, ALUC review of projects for consistency with the ALUCP is required for all structures greater than 70 feet in Zone C, and 150 feet in Zones D or E.

Because the transmission line and poles could affect navigable airspace, the FAA requires the Applicant to file Forms 7460-1, Notice of Proposed Construction or Alteration, and 7460-2, Notice of Actual Construction or Alteration (USDOT, 2007). Following the Applicant's submittal of Form 7460-1 for the FAA's safety assessment at least 45 days prior to the start date of construction, the FAA would conduct a safety analysis to determine the effect of the proposed towers and transmission line on aircraft operations. The Project must receive a "Determination of No Hazard to Air Navigation" in order to proceed.

The FAA conducted a similar safety analysis for the neighboring BSPP which would have 52 poles ranging in height from 90 feet to 145 feet, including 43 poles within the airport compatibility area. The FAA concluded that the proposed BSPP transmission line would not pose a hazard to air navigation. With pole heights of 70 to 145 feet, it is anticipated that the MSEP similarly would receive a "No Hazard" determination. This would be required prior to construction of the Proposed Action.

Construction

Construction of a portion of the proposed gen-tie line would occur within the Blythe Airport Compatibility Zones C, D, and E. Construction would include the use of cranes to install approximately 52 gen-tie support poles up to 145 feet in height and 7.9 miles of transmission line within the Blythe Airport Influence area. During pole installation, the total height of the cranes would extend higher than the proposed towers. In such a situation, a separate notice to the FAA is required. The FAA would consider the proposed construction method, including use of cranes, in its safety assessment. With receipt of an FAA "Determination of No Hazards to Air Navigation," construction of the Project would not have an adverse effect on aircraft operations.

Operation and Maintenance

Within 5 days of completing construction within the Airport Compatibility Area, the Applicant would be required to submit Form 7460-2 notifying the FAA of completion of construction. With prior receipt of a "No Hazard" determination, MSEP operation and maintenance would not have an adverse effect on aircraft operations.

Decommissioning

Decommissioning activities would be similar to construction activities, and would be considered as part of the safety assessment performed by the FAA. The Applicant would be required to submit Forms 7460-1 and 7460-2 to notify the FAA of any proposed alterations to the gen-tie line and support poles. With receipt of a "No Hazard" determination, decommissioning would not have an adverse effect on aircraft operations.

Environmental Site Contamination

Ground-disturbing activities would disturb on-site soils that may contain materials such as metals and perchlorates which, if inhaled, could result in adverse health effects for workers. Although some fugitive dust would result from operation and maintenance as described in Section 4.2, *Air Resources*, the primary concern if such materials are present on site would be construction workers potentially exposed to more dust. Because construction would be temporary, long-term exposures are not anticipated to occur. Implementation of dust suppression measures in APMs AIR-1 and AIR-2 would reduce the potential for worker exposure to any hazardous materials that may be present in site soils by reducing the amount of dust released from construction and operation activities. In addition, as described in Section 2.3.1.4.12, *Health and Safety*, construction-related safety programs and procedures would include a PPE program and respiratory protection program that would further reduce the potential for exposure to any existing on-site hazardous materials. Finally, implementation of Mitigation Measure HAZ-1, which requires the Applicant to prepare and implement a site-specific Hazardous Materials Safety Plan, would minimize potential exposures to existing hazardous materials if such materials are found to be present on site.

Risk of Accidents and Spills

Construction

Hazardous materials proposed for use during construction activities include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paint. As explained Section 2.3.1.4.10, *Waste and Hazardous Materials Management*, hazardous wastes generated by the Project would include an estimated 1 cubic yard per week of empty hazardous materials containers and approximately 175 gallons of used oil, spent solvents, and oily rags every 3 months. Fuel tanks and hazardous materials would be stored at staging areas, and wastes, such as empty hazardous materials containers and used oil, spent solvents, and oily rags, would also be accumulated prior to disposal. The use, storage, and disposal of hazardous materials and wastes associated with the Proposed Action could result in potential adverse health and environmental impacts if these materials were used, stored, or disposed of improperly, causing accidents and spills. Potential direct and indirect impacts of such releases could degrade soil and water quality or expose humans and wildlife to the harmful effects of hazardous materials.

As required, the Applicant would store all hazardous materials in the manner specified by the manufacturer and in accordance with local, state, and federal regulations. The construction SWPPP proposed by the Applicant and required by law would describe methods to reduce the potential for spills and establish procedures to minimize the effect of accidental releases. Best management practices (BMPs) established in the SWPPP would include protection measures for the temporary on-site storage of diesel fuels, hydraulic fluid, lubricants, and other hazardous materials used during construction, including requirements for secondary containment and berming to contain a potential release and to prevent any such release from reaching a nearby waterway. All employees would receive training in the proper use, storage, and handling of hazardous materials; equipment and materials storage would be routinely inspected for leaks and records maintained documenting compliance with regulations for the storage and handling of hazardous materials, as required by the SWPPP. Further, the Applicant would be required to prepare a SPMP that outlines the discharge prevention measures, spill containment systems, and procedures to be followed to contain and clean up potential releases from above-ground storage tanks.

The Applicant also would prepare an Emergency Action Plan (EAP) that would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM, the County, and local fire departments for approval before the Applicant receives an NTP. In addition, as described in Section 2.3.1.4.12, *Health and Safety,* construction-related safety programs and procedures would include a hearing conservation program, respiratory protection program, fall protection procedures, hot work procedures, cranes and rigging/lifting requirements, heavy equipment procedures, and others.

During construction activities for the Project, the potential exists that undocumented subsurface utilities (e.g., a natural gas line) or structures (e.g., an UST) might be encountered and damaged, resulting in a release of a hazardous material. The potential for such incidents would be reduced by thoroughly screening for subsurface structures in areas prior to commencement of any subsurface work. Screening activities would include use of DigAlert (Underground Services Alert of Southern California), visual observations, hand digging, and use of buried line locating equipment.

Compliance with existing regulations would reduce but would not completely avoid hazards to construction workers, the public, and the environment.

Operation and Maintenance

Project operation and maintenance would require the routine transport, use, and disposal of hazardous materials and hazardous wastes such as diesel fuel, hydraulic fluid, water treatment chemicals, oily rags, spent batteries. Storage of hazardous materials, described in Chapter 2, *Proposed Action and Alternatives*, would include an above-ground 3,600-gallon diesel tank, hydraulic fluid in tracker drives and drums, 500 gallons of mineral oil within each transformer, and various gases. Hazardous wastes are estimated to include approximately 1,000 gallons per year of used hydraulic fluid and oil, and one 55-gallon drum per month of oily rags and absorbent material. Limited pesticide use to control noxious weeds would occur in accordance to an Invasive Weed Management Plan following approval from the BLM. If hazardous materials or wastes were improperly handled, a release could occur that could affect public health or the environment.

Numerous federal, state, and local regulations ensure the safe transportation, use, storage, and disposal of hazardous materials. The Applicant must prepare a HMBP that describes the hazardous materials handled and demonstrates facility compliance with applicable handling, storage and disposal regulations. The HMBP must be reviewed and approved by the local CUPA, the Riverside County Department of Environmental Health, which would be responsible for facility inspections. In addition, the SPMP measures would minimize the potential for releases from storage tanks and containers to affect the environment. Pesticide use, if needed, would be limited to non-persistent, immobile pesticides applied only in accordance with manufacturer directions and all regulations for pesticide use. Any pesticide applications would be conducted within the framework of BLM and Department of Interior policies.

The Applicant's EAP would designate responsibilities and actions to be taken in the event of a fire or other emergency during operation and maintenance. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM and local fire departments for approval before the Applicant receives an NTP. As described in Section 2.3.1.4.12, the Applicant's Safety and Health Program would document worker safety practices. In addition to the EAP, the program would include a PPE Program and an IIPP to address health and safety issues associated with normal and unusual (emergency) conditions associated with the high voltage systems, mechanical systems, and other solar plant operations. Personnel would be properly trained in the handling of relevant chemicals and wastes and instructed in the procedures to follow in case of a chemical spill or accidental release.

Routine transportation of hazardous materials to the site could create a hazard to the public or the environment if materials were improperly handled, or indirectly could result in an incremental increase in the potential for accidents; however, Caltrans and the California Highway Patrol regulate the transportation of hazardous materials and wastes, with stringent packaging requirements, licensing and training for hazardous materials truck operators, chemical handlers, and hazardous waste haulers.

The Applicant is considering use of PV panels that contain a thin semiconductor layer containing cadmium telluride (CdTe). While CdTe itself is a hazardous substance in an isolated form, the CdTe in the PV panels is bound and sealed within the glass sheets and a laminate material (Fthenakis, 2003, 2008). A report by the Norwegian Geotechnical Institute (NGI) notes that "If the modules are destroyed during use and are exposed to rain, emissions can occur; however, a very low vapour pressure and water solubility are expected to result in only trace emissions into the environment" (NGI, 2010, p. 13). Additionally, an article that examined the potential for CdTe leaching from commercial rooftop solar PV installations found the worst-case modeled environmental concentrations in soil, air, and groundwater in a California-based scenario, are one to five orders of magnitude below human health screening levels (Sinha et al., 2012). If the Applicant chooses to use CdTe PV panels, implementation of Mitigation Measure HAZ-2, which requires the Applicant to prepare and implement a Broken PV Module Detection and Handling Plan, would minimize the potential for CdTe leaching from damaged panels.

Compliance with existing laws and regulations would reduce but not completely avoid potential impacts related to the routine use, storage, transportation, and disposal of hazardous materials.

Decommissioning

Project decommissioning would require the use of fuel and lubricants for construction vehicles and equipment, as well as the transport and disposal of hazardous materials used at the facility. PV panels would be returned to the vendor for appropriate recycling. Inadvertent release of hazardous materials from spills or leaks could occur. As discussed above, compliance with existing laws and regulations would reduce but not completely avoid potential impacts related to the routine use, storage, transportation, and disposal of hazardous materials.

Emergency Response

Construction

Project construction would occur primarily in undeveloped areas, accessed by secondary roads. The Riverside County Operational Area Emergency Operations Plan (RCFD, 2006) does not designate emergency evacuation routes; therefore, Project construction would not impair implementation of, or physically interfere with, an adopted emergency response or evacuation plan. Local roads are unlikely to be used as emergency routes because of the remote location of the Project site. The main access road to the solar plant would be designed to meet the RCFD requirements.

As discussed above, the Applicant would coordinate with local fire departments and emergency responders during preparation of an EAP that would outline emergency evacuation and response procedures.

Operation and Maintenance

Operation and maintenance of the Project would neither cause any road closures nor impair access to local roads. The main access road to the solar plant would be designed to meet the Riverside County Fire Department requirements. Both the main entrance gate and the secondary emergency access gate would be equipped with a Fire Department Knox Box or other access device and emergency contact placards.

As discussed above, the Applicant would coordinate with local fire departments and emergency responders during preparation of an EAP that would outline emergency evacuation and response procedures. The potential for adverse impacts related to emergency response would be low.

Decommissioning

Project decommissioning activities would be similar to construction activities, and so also would not impair implementation of or physically interfere with an adopted emergency response plan.

Public Health

Construction

As described in Section 3.9.1.4, incidence of WNV in Riverside County, and therefore the risk to public health from this vector-borne disease, is extremely low. Implementation of Mitigation Measure WATER-3, which requires a comprehensive drainage, stormwater, and sedimentation control plan, would reduce the potential for unintentional ponding of water on-site or downstream of the Project. This would reduce the risk of mosquito breeding on or near the site, and therefore would reduce the risk for workers and the public of contracting vector-borne diseases.

Additionally, as described in Section 3.9.1.4, incidence of Valley Fever in Riverside County is also low. However, fugitive dust generated during Project construction could expose workers to Coccidioides fungal spores that may be present in desert soils. Implementation of APM AIR-1 and Mitigation Measure AQ-1 would reduce fugitive dust during the construction phase, which would reduce the risk to workers of contracting Valley Fever.

Operation and Maintenance

Similar to construction, implementation of Mitigation Measure WATER-3 during operation and maintenance would reduce risk of vector-borne diseases. Implementation of APM AIR-2 and Mitigation Measure AQ-1 would reduce fugitive dust, which would reduce the risk of Valley Fever infections.

Decommissioning

Similar to construction, implementation of Mitigation Measure WATER-3 during decommissioning would reduce risk of vector-borne diseases. Implementation of APM AIR-1 and Mitigation Measure AQ-1 during decommissioning would reduce fugitive dust, which would reduce the risk of Valley Fever infections.

Intentionally Destructive Acts

Construction

The risk to workers or to the public from intentionally destructive acts during construction would be low, as public access to the proposed construction and staging areas would be controlled by security and fencing.

Operation and Maintenance

None of the chemicals proposed for use or storage at the solar plant site are on the list of regulated substances in 40 CFR §68.130; thus, the MSEP facility would not be covered by the security standards for chemical facilities. The consequences of release of all the hazardous materials used at the facility (diesel fuel, mineral oil, and hydraulic fluid) would not cause a threat to the health and safety of the surrounding community due to the limited quantity and toxicity of the substances and the distance to the nearest receptors. Nonetheless, the BLM encourages energy project applicants to implement at least a minimum level of security consistent with the standards to protect California's electrical infrastructure from intentionally destructive acts.

The level of security needed for a particular power plant depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. To determine an appropriate level of security for the adjacent BSPP, the CEQA and NEPA lead agencies for that project used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology, NERC guidelines, and U.S. Department of Homeland Security regulations to determine that the Project would fall into the “low vulnerability” category.

Given the similarities in location and the general type of proposed development relative to the BSPP, and the MSEP-specific security measures proposed by the Applicant, the BLM has determined that the MSEP also would fall into the “low vulnerability” category. The Applicant’s security measures would minimize the potential for power disruptions or hazardous materials release caused by outside parties. The risk to workers or the public from damage to the MSEP as a result of intentionally destructive acts would be low because public access would be controlled by security and fencing. Security fencing would be installed around the solar plant site perimeter, substations, and around the evaporation pond. The security fencing would be 8 feet tall, with 3-strand barbed wire. Once the Project is constructed, non-emergency access would be limited to the main gate and would require an electronic swipe card or other tracking mechanism to prevent unaccompanied or unauthorized access to the facility. All MSEP personnel, contractors, and visitors would be logged into and out of the facility during normal business hours. Visitors and contractors would be allowed entry only with approval from a staff member at the facility.

Decommissioning

The risk to workers or to the public from intentional acts during decommissioning would be low because public access to construction and staging areas would be controlled by security and fencing.

4.9.4 Alternative 2: Reduced Acreage

Construction

Alternative 2 would cause the same types of hazard and hazardous materials-related impacts as the Proposed Action. However, because the solar plant site would be smaller for Alternative 2 than for the Proposed Action, Alternative 2 would involve a smaller geographic area and shorter construction and decommissioning periods than the Proposed Action. Consequently, the hazards and hazardous materials-related impacts associated with the construction of Alternative 2 would be reduced relative to the Proposed Action. With implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential risks to workers from encountering hazardous materials, and to the environment from potential leaching of CdTe from damaged panels, would be reduced but not completely avoided.

Operation and Maintenance

Alternative 2 would cause the same types of hazard and hazardous materials-related impacts over the same time period as the Proposed Action. However, the geographic area within which

Alternative 2 would be developed would be smaller than for the Proposed Action, and so limit the area within which hazards to the public, workers, and the environment could result. Consequently, the hazards and hazardous materials-related impacts associated with the operation and maintenance of Alternative 2 would be reduced relative to the Proposed Action. With implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential risks to workers from encountering hazardous materials, and to the environment from potential leaching of CdTe from damaged panels, would be reduced but not completely avoided.

Decommissioning

Alternative 2 would cause the same types of decommissioning-related hazards and hazardous materials impacts as decommissioning the Proposed Action; however, Alternative 2's smaller footprint would constrain the area within which accidents or upsets could occur and thereby release hazardous materials. Consequently, the hazards and hazardous materials-related impacts associated with decommissioning Alternative 2 would be reduced relative to the Proposed Action.

4.9.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.9.5.1 Central Route

Direct and Indirect Impacts

The Central Route would cause the same types of construction and decommissioning-related hazards and hazardous materials impacts as the Proposed Action, although the location of the impacts associated with the proposed gen-tie route would be shifted to the west relative to the Proposed Action. The Central Route would be shorter than for the Proposed Action, resulting in a slightly shorter duration for construction and decommissioning and, thereby, a slightly reduced potential for accidents or upsets to occur. Consequently, the hazards and hazardous materials-related impacts associated with constructing and decommissioning the Central Route would be slightly reduced relative to the Proposed Action. With implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential risks to workers from encountering hazardous materials would be reduced but not completely avoided.

The Central Route would cause the same operation and maintenance-related hazards and hazardous materials impacts as the Proposed Action. The length of the Central Route within the Blythe Airport Influence Area would be 5.86 miles, which is slightly shorter than the proposed gen-tie and access road route; however, there would be no substantial difference between this Alternative and the Proposed Action because the Applicant would need to obtain an FAA Determination of No Hazard prior to construction regardless of which Alternative were selected.

4.9.5.2 Western Route

Direct and Indirect Impacts

The Western Route would cause the same types of construction and decommissioning-related hazards and hazardous materials impacts as the Proposed Action, although the location of the impacts associated with the proposed gen-tie route would be shifted to the west relative to the Proposed Action. The Western Route would be longer than for the Proposed Action, resulting in a slightly longer duration for construction and decommissioning and, thereby, a slightly increased potential for accidents or upsets to occur. Consequently, the hazards and hazardous materials-related impacts associated with constructing and decommissioning the Western Route would be slightly increased relative to the Proposed Action. With implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential risks to workers from encountering hazardous materials would be reduced but not completely avoided.

The Western Route would cause the same operation and maintenance-related hazards and hazardous materials impacts as the Proposed Action. The length of the Western Route within the Blythe Airport Influence Area would be 5.38 miles, which is slightly shorter than the proposed gen-tie and access road route; however, there would be no substantial difference between this Alternative and the Proposed Action because the Applicant would need to obtain an FAA Determination of No Hazard prior to construction regardless of which Alternative were selected.

4.9.6 Alternative 4: No Action Alternative

If Alternative 4 were implemented, Project-specific changes would be implemented on the site and the existing environmental setting described in Chapter 3 would be maintained. As a no-development alternative, the No Action Alternative would result in no changes to conditions related to hazards and hazardous materials.

4.9.7 Cumulative Impacts

Depending on the pathway of exposure, the geographic scope for cumulative effects relating to hazardous materials would be the air basin, watershed boundary, groundwater basin, or extent of affected soils. Materials delivery routes also would be included in the event of a traffic accident-related spill. The geographic scope for cumulative effects related to aviation safety is the Blythe Airport Influence Area. The temporal scope of hazardous materials impacts would occur throughout the life of the Project. For aviation safety impacts, this time period likely could extend past site closure and decommissioning of the MSEP because the transmission lines could accommodate power from other nearby electricity generation projects.

Many of the cumulative projects along the I-10 corridor identified in Tables 4.1-3 and 4.1-4 could cause similar impacts related to the potential for release of hazardous materials during routine use, transport, storage, and disposal for construction and operation of these projects.

Construction, operation, maintenance, and decommissioning of the Project would result in impacts related to the potential to encounter hazardous materials, or for accidents during the routine use of hazardous materials, to release hazardous materials into the environment or cause harmful exposures. With implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential risks to workers from encountering hazardous materials, and to the environment from potential leaching of CdTe from damaged panels, would be reduced but not completely avoided.

Impacts caused by the cumulative projects, combined with the Project, would not result in an adverse cumulative hazards or hazardous materials impact even if all of the projects were to be constructed simultaneously. The Project and all cumulative projects would be required to adhere to the robust body of regulations that govern hazardous materials transport, storage, and handling, water quality BMPs, and worker safety and because these laws and other requirements have been adopted with cumulative safety considerations in mind and to be sufficiently protective of human health and safety under cumulative conditions. Compliance with these measures would ensure that impacts related to exposure to hazardous materials would be minimized and/or avoided.

With respect to aviation safety, the incremental impacts of construction, operation, maintenance, and decommissioning of the MSEP could contribute to a cumulative effect on aviation safety when considered in combination with additional transmission lines and support poles that would be associated with the cumulative projects that are or may be located within the Blythe Airport Influence Area: the existing DPV1 Transmission Line and Blythe Energy Project Transmission Line, and future or proposed DPV2 Transmission Line Project, Desert Southwest Transmission Line, and gen-tie lines for the BSPP, enXco McCoy, Blythe Airport Solar I, Gypsum Solar, and Palo Verde Mesa Solar projects. Each of these projects would be subject to the same required FAA aviation safety assessment as the MSEP. The FAA "Determination of No Hazard to Air Navigation" must address the "Cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures" (USDOT, 2012). The issuance of this determination would signify that no adverse cumulative impact would result from the Project in combination with other projects within the Blythe Airport Compatibility Area. Additionally, the Riverside County ALUC evaluates any proposals for power lines, especially if the power lines would be located wholly or partially in Zones B1 or C, and/or if the power lines would intersect the straight-line extension of a runway.

The development and operation of the MSEP would contribute an incremental "low vulnerability" determination with respect to intentionally destructive acts that could combine with the individual threat levels of other past, present, or reasonably foreseeable future energy generation projects. The geographic scope of the cumulative impacts analysis for such threat would be the California Desert area. Potential cumulative effects could occur at any time during the lifespan of the MSEP, but would not persist past closure and decommissioning.

Other past, present, and reasonably foreseeable renewable energy generation projects are identified in Tables 4.1-3 and 4.1-4 and include similar utility-scale solar proposals and projects such as BSPP, Genesis, Palen, and Desert Sunlight. These facilities also have been determined to have a low threat level. The human and environmental consequences of a realized threat of an intentionally destructive act could be comparable regardless of an energy generation facility's size or power output; however, although possible, it seems unlikely that the targeting of renewable energy facilities along the I-10 corridor would result in a catastrophic event. Intentionally destructive acts are by their nature unpredictable, and it would be speculative to conclude that the MSEP would cause or contribute to a significant cumulative effect in this regard.

The RCFD has indicated that the Project would contribute to an adverse cumulative impact on its ability to provide an acceptable level of service at the Project site as a result of the development of the numerous renewable energy projects existing, approved, and proposed in eastern Riverside County. This cumulative impact would result from an increased number of calls for emergency and other public services due to the increased presence of structures, traffic, hazardous materials, and service vehicles. A response to an emergency at the Project site by the RCFD would require multiple units to respond. In the event of a fire, medical emergency, hazardous material or technical rescue incident, the RCFD would then be required to cover or back fill stations left uncovered in order to meet the service demands of the region. If an incident were to occur, fire units would be dispatched from Blythe, Indio, and the lower Coachella Valley as part of the regional integrated fire protection response system, and the Project site would experience extended response times from specialized equipment.

4.9.8 Mitigation Measures

HAZ-1: Site-specific Hazardous Materials Safety Plan. The Applicant shall prepare and implement a site-specific Hazardous Materials Safety Plan. The plan shall identify the chemicals potentially present in on-site soils, health and safety hazards associated with those chemicals, monitoring to be performed during site activities, soil handling and disposal methods required to minimize the potential for harmful exposures, appropriate personal protective equipment, and emergency response procedures. The Plan shall be included in and implemented as part of the Project's larger Safety and Health Program. The plan shall be submitted to the BLM for approval prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction and operation of the Project.

HAZ-2: Broken PV Module Detection and Handling Plan. If photovoltaic (PV) panels containing cadmium telluride (CdTe) are used on the Project site, the Applicant shall prepare and implement a Broken PV Module Detection and Handling Plan. The plan shall describe the Applicant's plan for identifying and handling photovoltaic (PV) modules that may break, chip, or crack at some point during the Project's life cycle. The plan shall describe and define methods for detecting and handling broken PV modules to ensure the safe handling, storage, transport, and recycling and/or disposal of the modules and related electrical components in a manner that is compliant with applicable law and protective of human health and the environment. The plan shall be submitted to the BLM for approval prior to commencement of construction activities and shall be distributed to all construction crew members and temporary and permanent employees prior to construction and operation of the Project.

4.9.9 Residual Impacts after Mitigation Incorporated

Following implementation of Mitigation Measures HAZ-1 and HAZ-2, potential impacts related to hazards and hazardous materials would be avoided or substantially reduced.

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4.10 Lands and Realty

4.10.1 Methodology for Analysis

Evaluation of potential land use impacts of the Proposed Action and Alternatives is based on review of the BLM Master Title Plats and Land & Mineral Legacy Rehost 2000 System (LR2000), which is an automated record system, to obtain information related to pending and authorized uses on the lands potentially affected by the Project and its ancillary facilities. The BLM Washington Office and California State Office web sites provided additional information relating to corridor designations and solar study areas potentially affected by the Proposed Action.

Impact assessment is based on known impacts relative to construction, operation, maintenance, and decommissioning of rights-of-way and land use permits of all types on BLM-administered land. Potential land use conflicts are identified and evaluated based on existing land uses, land uses proposed as part of the Proposed Action and Alternatives, federal land use designations established in the CDCA Plan, and BLM land use-related standards and policies. Land use compatibility is based on the intensity and patterns of land use to determine whether the Project would result in incompatible uses or nuisances. Potential land use conflicts (specifically during construction and decommissioning) usually result from other environmental effects, such as generation of noise, dust, or heavy truck traffic associated with materials delivery. Potential operation and maintenance-related land use impacts of the Project are evaluated in this section.

The analysis of potential impacts to MUCs is based on review of the MUC Guidelines provided in Table 1 of the CDCA Plan. The analysis was prepared by reviewing the applicable CDCA Plan requirements and concepts (including multiple-use, sustained yield, and maintenance of environmental quality) on Class L land and evaluating the proposal to determine whether it would be consistent with them. These guidelines provide that solar electrical generation facilities may be allowed in Class L areas in accordance with federal, state, and local laws subject to approval of a CDCA Plan amendment by the BLM. A variety of resources were reviewed and relied upon in preparing this analysis, including but not limited to BLM's Land Use Planning Handbook (BLM, 2005); other BLM manuals, including BLM Manual 6840 concerning Special Status Species Management (BLM, 2008); BLM Instruction Memorandum No. 2008-014, concerning the Clarification of Guidance and Integration of Comprehensive Travel and Transportation Management Planning into the Land Use Planning (BLM, 2007a); and the CDCA Plan.

4.10.2 Applicant Proposed Measures

There are no APMs to address potential effects to lands and realty.

4.10.3 Alternative 1: Proposed Action

4.10.3.1 Direct and Indirect Impacts

Proposed Action

This impact assessment is based on known impacts relative to construction, operation, maintenance, and decommissioning of ROWs and land use permits of all types on BLM-administered land. Potential land use conflicts are identified and evaluated based on existing land uses, land uses proposed as part of the Proposed Action and Alternatives, federal land use designations established in the CDCA Plan, and BLM land use-related standards and policies. Land use compatibility is based on the intensity and patterns of land use to determine whether the Project would result in incompatible uses or nuisances.

Although there are numerous existing ROWs of record within and adjacent to the designated corridors, only a few would be affected by the Project. Any existing authorization that would be affected by the Project has “priority rights” in the sense that any new authorization(s) would be issued “subject to” the previously granted rights of the existing ROW holders. Therefore, the Applicant would be required to mitigate any potential impact to the existing users at the Applicant’s expense. This would mean bearing all costs for relocating or modifying any facilities such as power poles or conductor that might be necessary to accommodate the new use. This priority right attaches when a ROW is granted; subsequent grants of ROW would be issued subject to the rights of prior grants. Here, if and after the proposed ROW is granted for the Project, subsequent applicants would have to mitigate any impact of their proposals to the Project.

Fiber optic cables would be co-located with the gen-tie and distribution lines. On site, fiber optic cable could be buried at the solar plant site. This underground cable would not cross over any existing authorized underground use.

Impacts to Land Use Plans

The Applicant is requesting a ROW grant (Application CACA-048728) from the BLM for approximately 7,700 acres of public land. The Project site is within the BLM’s California Desert District and within the planning boundaries of the CDCA Plan. If a ROW grant is approved for the Project, then a land use plan amendment also would be required to identify the site in the CDCA Plan as an appropriate site for the proposed use. The site is classified as “Class L” or limited use, in which electrical generation facilities, including solar generation, may be allowed after NEPA requirements are met. The total acreage of the Class L designation that would be permanently affected by the Project would be 3,960 acres for the solar plant and approximately 59 acres for the proposed Eastern Route for the gen-tie line, access road, and switchyard, or a total of 4,019 acres. Construction would result in disruptions to existing allowable land uses, in particular, on-site recreation activities (OHVs) as discussed in Section 4.14, *Recreation and Public Access*. No changes in the MUC classification would be required prior to approving the ROW grant, and as discussed in the consistency analysis above, the land use activities associated with the Project would be consistent with MUC Guidelines. Although the Project would be consistent with MUC Guidelines, approval of the ROW grant would restrict use opportunities on the Project site to a single use for the anticipated 30-year lifespan of the Project, making this land unavailable for other uses. After the Project has been decommissioned, the Class L lands within the Project site boundary would again be available for multiple uses consistent with the MUC Guidelines.

A portion of the Project would also be constructed on approximately 477 acres of private land under the land use authority of Riverside County.

Impacts to Designated Corridors

Potential impacts to the designated corridors could occur as a result of the gen-tie line crossing the corridors on a nearly perpendicular alignment rather than following along the corridor path. Impacts to the corridors from the fiber optic line would be the same as the gen-tie line. However, with modern technology, impacts would be expected to be minimal, easily mitigated and would not preclude continued and future use of either designated corridor. Future use would be slightly constrained by placement of additional facilities within the corridors.

Impacts from the access road exiting the frontage road and heading north to the Project would be minimal because future transmission lines, both gas and electric, could bore under or span across the road, respectively. Future use would be slightly constrained by placement of additional facilities within the corridors.

The Project facility would create no conflict with Corridors J, K, and 30-52 since the footprint of the facility would be completely outside these corridors. The distribution line would connect to an existing electric line located on the western edge of the corridor in Section 8, Township 6 South, Range 22 East, creating no known conflict.

The linear facilities that would affect Corridors K and 30-52 include the gen-tie line, fiber optic line, and access roads (I-10, Black Rock Road, and an estimated 0.5 mile of upgraded Black Creek Road). The gen-tie line would cross Corridors K and 30-52 and then proceed west along the southern side of the corridors for approximately 4 miles before turning south and exiting the corridors to connect with the CRS. There is no known conflict with the proposed gen-tie line either crossing over or lying within Corridors K and 30-52.

The fiber optic line would be placed on the gen-tie and distribution line support structures; therefore, no additional width for the fiber optic lines would be needed and no conflict with Corridors K and 30-52 has been identified.

Construction materials and personnel traveling to and from the Project would result in an increase in traffic on I-10, Black Rock Road, and the portion of the access road (Black Creek Road) lying with the corridors. The increased level of traffic would be temporary and would not result in a need for upgrading or widening of any of these roads; therefore, no conflict with Corridors K and 30-52 would result. Although there are numerous ROWs currently authorized within Corridors K and 30-52, a width in excess of 8,500 feet would remain within the corridors to accommodate the gen-tie line, leaving sufficient space to accommodate anticipated future needs. (Kershaw, 2011).

Impacts to Interstate 10

Potential impacts to I-10 from the overhead gen-tie line and fiber optic line would be mitigated by following requirements of the Federal Highway Administration (FHWA) and/or Caltrans, and industry standards (SOPs) and best management practices (BMPs) for aerial crossings of federal highways.

Impacts to Other Authorized Uses

As proposed, the gen-tie line would cross multiple existing linear ROWs both north and south of I-10. Once across the highway, the line would turn to the west and parallel the highway and existing power lines to the point of interconnection with the CRS. Potential impacts from the fiber optic cable would be the same as the overhead power line. These Project components would be consistent with the requirements of CPUC General Order No. 95 regarding the configurations of utility lines in shared ROWs. Construction and operation of these new linear facilities using industry SOPs and BMPs for crossing over existing authorized uses would effectively mitigate potential negative impacts to existing authorized users.

4.10.4 Alternative 2: Reduced Acreage

4.10.4.1 Direct and Indirect Impacts

The total acreage of the Class L designation that would be affected by construction of Alternative 2's solar plant site would be 1,782 acres, which would be 2,178 fewer acres than the Alternative 1 solar plant site. The Alternative 2 solar plant would be built within the ROW boundary of the Proposed Action. Therefore, as described above, there would be no impacts to existing uses from Alternative 2.

4.10.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.10.5.1 Central Route

Direct and Indirect Impacts

The Central Route would be incrementally shorter than the proposed gen-tie line and access road route, and so it would result in a slightly smaller area of Class L lands being unavailable for other allowable uses. Nonetheless, there would be no substantial difference between the Central Route and the Proposed Action.

The Central Route would not cross or be located within any designated corridors, nor would it cross other existing uses. The Central Route would be within a ROW reserved for the linear facilities associated with both BSPP and the Project and which can accommodate both projects, and would not conflict with the BSPP ROW. This alternative would have the same effects related to existing uses and established corridors.

4.10.5.2 Western Route

Direct and Indirect Impacts

The Western Route would be incrementally longer than the proposed gen-tie line and access road route, and so it would result in a slightly larger area of Class L lands being unavailable for other allowable uses. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action.

The Western Route would not cross or be located within any designated corridors, nor would it cross other existing uses. This alternative would have the same effects related to existing uses and established corridors.

4.10.6 Alternative 4: No Action Alternative

The No Action Alternative would result in no MSEP-specific impact with respect to lands and realty at the Project site because the BLM would not issue a ROW grant to the Applicant.

4.10.7 Cumulative Impacts

4.10.7.1 Geographic Scope

The geographic scope of the cumulative effects analysis for lands and realty includes the Project site and the location of ancillary facilities, as well as nearby designated utility corridors.

4.10.7.2 Temporal Scope

Potential cumulative effects on lands and realty could occur during the Project's proposed 46-month construction period, 30-year projected lifespan, and decommissioning and closure period, as well as during the lifespan of other projects whose features may be located based on constraints imposed by implementation of the Project.

4.10.7.3 Impacts to Land Use Plans

The geographic scope of the cumulative effects analysis for multiple-use classes includes CDCA Plan area lands designated Class L in eastern Riverside County. This geographic scope was established based on the boundaries of the affected resource. As shown in Table 3.10-1 in Section 3.10, there are 550,087 acres of Class L lands in eastern Riverside County. The temporal scope of cumulative impacts would result throughout the life of the project. During this period, from start of construction to the completion of decommissioning activities, the existence of the Project would preclude the development of other uses on the site and, thereby, affect the type of use opportunities on Class L lands within the CDCA Plan area.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition, Class L use opportunities presently being exercised, and, where such opportunities are not currently being exercised, the flexibility to elect to pursue one or more among them at some point in the future. The effects of past actions are reflected in the discussion in Chapter 3. Effects of the Project on MUCs, as analyzed above, relate to the opportunity cost of implementing the Project. If the Project or an alternative is developed on the site, the site cannot be used for other Class L use opportunities that otherwise would be available on the site. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, projects that also would be developed wholly or partially on lands designated as Class L would similarly restrict available use opportunities within that classification for the duration of those projects. These projects include the Desert Southwest Transmission Line Project; the enXco McCoy, BSPP, Palo Verde 2, and Rio Mesa renewable energy projects; and the Eagle Mountain Landfill Project. The Project would remove approximately 4,019 acres, and Alternative 2 would remove 1,782 acres plus 59 acres (if paired with the Eastern Route) or slightly less (if paired with the Central Route) of Class L lands from availability for other uses.

The projects listed above and described in Table 4.1-4 would occupy over 40,000 acres of Class L lands in eastern Riverside County, for a total of approximately 44,000 and 42,000 acres including the Project's or Alternative 2's contribution, respectively. Of the total Class L lands in eastern Riverside County, the Project represents less than 1 percent, with a total cumulative effect of approximately 8 percent. Alternative 2 represents less than 0.5 percent with a total cumulative effect of approximately 7.6 percent. The contributions of the Alternative 3 gen-tie and access road routes would be negligible, with a difference of fewer than 10 acres compared to the proposed Eastern gen-tie line and access road route.

Since over 500,000 acres of Class L lands in eastern Riverside County would remain available for other uses; other classes of lands can also support some of the same uses Class L lands allow; and upon completion of decommissioning these lands would be available for other uses, no significant cumulative impact would result from the cumulative scenario to which the Project's incremental impact could contribute.

4.10.7.4 Impacts to Designated Corridors

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in PA/FEIS Chapter 3. Direct and indirect effects of the construction, operation and maintenance, and closure and decommissioning of the Project are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, other ROW applications for projects that could be developed adjacent to the Project and that could be constrained by the Project's effects on land use include the approved BSPP and proposed enXco McCoy project, which could be developed directly to the south and north of the Project site, respectively. These projects each propose to tie into the CRS and portions of each gen-tie route would be developed as adjacent transmission lines. Impacts resulting from construction, operation, maintenance, and decommissioning of the Project could result in a cumulative effect on lands and reality in combination with these other past, present, or reasonably foreseeable future actions if future projects were constrained by the placement of Project-related facilities both within and outside of nationally and locally designated corridors, such that they were deemed infeasible or required to occupy other ROWs due to the Project's location.

Multiple ROW applications are pending in the vicinity of the Project, and the adjacent BSPP ROW grant application was approved in 2010. The Applicant would build a double-circuit 230 kV line to carry up to 750 MW from the Project site, and based on the available documentation for the transition cluster participants, Solar Millennium would build a double-circuit 230 kV line carrying 1000 MW from the BSPP site and enXco would build a double-circuit 230 kV line to support its enXco McCoy development efforts north of the Project site (BLM, 2010; Black, 2010).

BLM's general policy is to review ROWs in the order in which they are received, and the ROW grant for the BSPP site to the south was approved in 2010. However, each of the pending applications would be for a project on BLM land and it is in BLM's interest to have utilities on its property co-located in common utility corridors. Accordingly, BLM has asked the Applicant to provide connectivity through and around the Project site for use by the other proposed projects.

Two sets of policies are relevant to the co-location of parallel transmission lines. First, the WECC policy, described in Section 3.22.3, *Transmission Line Safety and Nuisance*, is to separate adjacent transmission lines with a distance that is equal to or greater than the longest span length of the transmission lines in question, which for the proposed Project is anticipated at 800 to 1,000 feet (WECC, 2011). Second, the most recent available CAISO grid planning standards specify the maximum amount of power that can be interrupted to maintain transmission system reliability as follows:

1. 1,150 MW of capacity can be interrupted under a single contingency (i.e. one transmission line or circuit, one transformer bank, etc.)

2. 1,400 MW of capacity can be interrupted under a double contingency (i.e. two transmission lines or circuits (including two circuits on a single tower), two transformer banks, etc.) (CAISO, 2008).

Of these two sets of policies, the WECC transmission line separation criterion appears most likely to constrain efforts to accommodate connectivity of the other proposed actions, because as proposed, the Project and the cumulative projects would not combine in a way that would exceed the listed CAISO grid planning standards. The Project's gen-tie line would roughly follow the eastern border of the BSPP site after exiting the Project site, then turn southwest, paralleling the BSPP gen-tie line beginning south of the BSPP site and continuing across I-10 and west to the CRS. The proposed enXco McCoy project could achieve connectivity to the CRS either via the western borders of the Project and BSPP sites or by extending east until reaching designated Corridor J, then crossing or turning west within Corridors K and 30-52 and paralleling the Project and BSPP gen-tie lines on the southern border of Corridors K and 30-52 until reaching the CRS. There remains sufficient capacity within Corridor J to accommodate up to 50 new transmission or gas lines and/or expansion of existing uses (Kershaw, 2011). For the portions of the gen-tie lines that would be parallel to one another, the necessary minimum combined width of the corridor containing the three lines would be at least 2,100 feet.[1] There are no apparent land constraints along the proposed route that would make this width infeasible.

The Project would not constrain lands or realty for reasonably foreseeable future projects in a way that would make them infeasible or that would result in adverse impacts to land use and realty.

If the Alternative 3 Central Route were implemented, the enXco McCoy gen-tie would be able to follow either the eastern or western borders of the Project and BSPP sites. If the Alternative 3 Western Route were implemented, the enXco McCoy gen-tie would be able to follow the eastern borders of the Project and BSPP sites. The contribution of these alternatives to a cumulative lands and realty effect would be the same as the Project.

4.10.8 Mitigation Measures

No mitigation measures are required to reduce impacts related to lands and realty and land use planning. The Project would conform to power industry standards and best practices for the collocation of utility lines. The portion of the Project that is proposed to cross I-10 would be consistent with the requirements of Caltrans' encroachment permit, eliminating land use impacts related to encroachment of highways.

4.10.9 Residual Impacts after Mitigation Incorporated

Because no mitigation measures are recommended, impacts to lands and realty would be the same as discussed in Section 4.10.3, *Alternative 1: Proposed Action*.

4.10.10 CDCA Plan Consistency

The Project site is located in the CDCA planning area within Class L lands. The total area of Class L lands that would be affected by construction of the Project would be approximately 4,019 acres. Approval of the ROW grant would restrict multiple-use opportunities on the Project site to a single dominant use for the anticipated 30-year lifespan of the Project. This restriction would be lifted upon closure and decommissioning of the Project; thereafter, use opportunities on the site could return to the pre-Project conditions discussed in Section 3.10.

Land uses that are not in conformance with the CDCA Plan would require a plan amendment. As noted above, the proposed Project site is not expressly identified in the CDCA Plan as a solar energy generation site. Consequently, a CDCA Plan amendment would be required.

The process for considering amendments to BLM land use plans is described in the agency's *Land Use Planning Handbook* (BLM, 2005). The general process for amending a BLM Land Use Plan is as follows:

[1] This includes 1,000 feet between each line to comply with WECC standards, plus a 50-foot allowance on either side of the two outside lines, as is proposed for the Project gen-tie line.

1. The plan amendment process would be completed in compliance with FLPMA, NEPA, and all other relevant federal law, executive orders, and BLM management policies.
2. The plan amendment process would include an EIS to comply with NEPA.
3. Where existing planning decisions remain valid, those decisions may remain unchanged and would be incorporated into the new plan amendment.
4. The plan amendment would recognize valid existing rights.
5. Native American tribal consultations would be conducted in accordance with policy, and tribal concerns would be given due consideration.
6. Consultation with other agencies with jurisdiction would be conducted throughout the plan amendment process.

Chapter 7 of the CDCA Plan details the plan amendment process. The Project proposes a Category 3 amendment because it requests a specific use or activity, which is not currently authorized by an existing plan element—specifically, the Energy Production and Utility Corridors Element. In analyzing the request to amend the CDCA Plan, the analysis of the proposed amendment will:

1. Determine whether the request has been properly submitted and whether any law or regulation prohibits granting the requested amendment.
2. Determine whether alternative locations within the CDCA are available that would meet the Applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.
3. Determine the environmental effects of granting and/or implementing the Applicant's request.
4. Consider the economic and social impacts of granting and/or implementing the Applicant's request.
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from federal, state, and local government agencies.
6. Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Details concerning the proposed amendment for the Project or an alternative are provided in Chapter 2, *Proposed Action and Alternatives*. This PA/FEIS acts as the mechanism for satisfying NEPA requirements for the CDCA Plan Amendment process, and provides the analysis required to support a CDCA Plan Amendment to identify the proposed site as suitable or unsuitable for solar development within the Plan.

As analyzed above, all of the BLM-administered lands proposed for use by the Project and alternatives are classified in the CDCA Plan as Class L. MUC designations govern the type and degree of land uses allowed within the classification area. All land use actions and resource-management activities on BLM-administered lands within a MUC delineation must meet the guidelines for that class. These guidelines are provided in Table 1, Multiple-Use Class Guidelines, of the CDCA Plan.

The Class L designation allows electric generation plants for solar facilities to be developed in accordance with federal, state, and local regulations after NEPA requirements are met. The specific application of the MUC designations and resource management guidelines for a specific resource or activity are further discussed in the plan elements section of the CDCA Plan. In Class L designations, the AO is directed to use judgment in allowing for consumptive uses by taking into consideration the sensitive natural and cultural values that might be degraded.

The site of the Project and alternatives analyzed above meets the MUC Guidelines as noted in the CDCA Plan for the resources listed below. See Table 3.10-2, *Multiple-Use Class L Land Use and Resource Management Guidelines*, in Section 3.10.

For purposes of this discussion, the terminology "Proposed Action and Alternatives" is used herein since the classification of the BLM-administered portion of the site of the Proposed Action and Alternatives 2 through 6 would be the same (Class L).

4.10.10.1 Agriculture

Agricultural uses of Class L lands are not allowed, with the exception of livestock grazing. The site is not currently used for agriculture and the Project would not involve use of the site for agriculture.

4.10.10.2 Air Quality

Class L lands are to be managed to protect air quality and visibility in accordance with Class II objectives of Title I, Part C of the CAA as amended. The anticipated maximum annual and daily construction emissions that would be associated with the Project are provided in Tables 4.2-2 and 4.2-3 of Section 4.2, *Air Resources*. The analysis indicates that with the exception of PM10 impacts during construction, the Project would not create new exceedances or contribute to existing exceedances for any of the criteria air pollutants. Maximum annual construction emissions would not exceed any of the applicable general conformity de minimis thresholds. The maximum daily and annual operation emissions that would be associated with the Project are provided in Tables 4.2-4 and 4.2-5. Annual operation emissions are anticipated to be well under the general conformity de minimis thresholds. The magnitude of the impacts of decommissioning emissions are expected to be significantly less than those estimated for Project construction since decommissioning would occur after at least 30 years of operation, and it is expected that on-road and off-road equipment engine technology would be far more advanced and cleaner than is currently the case. Therefore, the Project would conform to the CAA Class II objectives referenced in the CDCA Plan MUC guidelines.

4.10.10.3 Water Quality

The CDCA Plan states that Class L lands are to be managed "to provide for the protection and enhancement of surface and groundwater resources" using the BLM's BMPs prepared in compliance with the CWA §208 and Executive Order 12088, both of which address federal compliance with pollution control standards (BLM, 1980, p. 15). The BMPs that are relevant to the Project would be applied during implementation of Mitigation Measures WATER-1 through WATER-3, described in Section 4.20, *Water Resources*. With implementation of these surface and groundwater quality BMPs, impacts to water resources and water quality would be minimal, and the Project would conform to the CDCA Plan guidelines for Class L lands.

4.10.10.4 Cultural and Paleontological Resources

Cultural and paleontological resources are to be preserved and protected within Class L lands, and procedures described in 36 CFR 800 are to be observed where applicable. As described in detail in Sections 4.5, *Cultural Resources*, and 4.13, *Paleontological Resources*, impacts on cultural and paleontological resources resulting from the construction, operation and maintenance, and decommissioning of the Project would be mitigated and would conform to the MUC Guidelines. Adverse effects on cultural resources listed on or determined eligible for the NRHP would be resolved in accordance with a MOA being prepared for the Project in consultation with the California SHPO, Indian tribes, and other interested parties in accordance with NHPA §106.

4.10.10.5 Native American Values

Under the MUC Guidelines, Native American cultural and religious values are to be protected and preserved and the appropriate Indian tribes are to be consulted. Consultation with Indian tribes was initiated during planning phase of the Project and will continue during the NEPA process (Section 4.5, *Cultural Resources*, and Chapter 5, *Consultation, Coordination, and Public Involvement*, describe the Native American consultation processes). Opportunities have been provided to allow Indian tribes to identify places and resources of importance to them and to express concerns regarding cultural and religious values that could be affected by the Project.

Adverse effects on any places of traditional cultural or religious importance that are identified by tribes would be resolved in accordance with the MOA being developed for the Project with tribal participation. Potential impacts to and protection of cultural resources are discussed in more detail in Section 4.5, *Cultural Resources*. Collectively, these measures ensure that preservation and protection of Native American cultural and religious values associated with cultural resources is accomplished in accordance with the CDCA Plan MUC Guidelines.

4.10.10.6 Electrical Generation Facilities

Solar generation may be allowed on Class L lands after NEPA requirements are met. This PA/FEIS represents the mechanism for complying with the NEPA requirements.

4.10.10.7 Transmission Facilities

Class L guidelines allow electric transmission to occur in designated ROW corridors. The Project would require a 230 kV gen-tie line to interconnect Project generation output with the CRS that would not be within a designated ROW corridor. The CDCA Plan requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a Project-specific CDCA Plan amendment along with the ROW grant for the Project. Upon BLM's amendment of the CDCA plan for the Project, the Project would be fully compliant with the CDCA Plan. This PA/FEIS acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.

4.10.10.8 Communication Sites

Communication sites may be allowed on Class L lands after NEPA requirements are met. The Project would not involve installation of communications sites and therefore would not be affected by the MUC guidelines for this land use activity.

4.10.10.9 Fire Management

The Project site is located in a FRA under the jurisdiction of BLM, and the site is within a moderate FHSZ. As part of the Project, the Applicant would implement the fire prevention and suppression measures described in Section 2.3.1.4.11, *Vegetation Management and Fire Protection Systems*, including submitting an EAP for use during construction, and installing a fire protection system that includes on-site water storage, hydrants, and fire extinguishers. Additionally, as described in Section 4.21, *Wildland Fire Ecology*, Mitigation Measure FIRE-1 requires the Applicant to prepare and implement a Fire Safety Plan in consultation with the BLM to reduce the risk of fire and to train personnel to respond to fires on site. Should a fire occur in the area that is not specific to the facility, it would be addressed by BLM, not by the Applicant, and it would be addressed in conformance with the Fire Safety Plan and, therefore, would conform to the MUC guidelines for Fire Management for Class L lands.

4.10.10.10 Vegetation

Table 1 of the CDCA Plan includes a variety of guidelines associated with vegetation as follows:

Vegetation Harvesting

Native Plants. Commercial or non-commercial removal of native plants in Class L areas may be allowed only by permit after NEPA requirements are met, and after development of necessary stipulation. Approval of a ROW grant for the Project would constitute the permit for such removal. The conditions of approval that would be required in a Record of Decision would constitute the stipulations to avoid or minimize impacts from removal of native plants.

Harvesting by mechanical means. Harvesting by mechanical means may be allowed by permit only. Although the Project may include the collection of seeds to assist with reclamation, the removal of these items would not be done for distribution to the public. Also, the guidelines for vegetation harvesting include encouragement of such harvesting in areas where the vegetation would be destroyed by other actions, which would be the case with the Project. Therefore, the Project would be in conformance with this MUC guideline.

Rare, Threatened, and Endangered Species, State and Federal. In all MUC areas, all federal and state-listed species are to be fully protected. In addition, actions that may jeopardize the continued existence of federally listed species will require consultation with the USFWS. As evaluated in Section 4.3, *Biological Resources – Vegetation*, no federal or state-listed plants would be affected by the Project.

Sensitive Plant Species. Identified sensitive plant species would be given protection in management decisions consistent with BLM's policy for sensitive species management, BLM Manual 6840 (BLM, 2008). The objective of this policy is to conserve and/or recover listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. Six special-status plants were identified, of which one, Harwood's eriastrum (*Eriastrum harwoodii*), is considered a BLM-sensitive plant. Impacts and mitigation measures associated with this species and other special-status plant species are discussed in Section 4.3, *Biological Resources - Vegetation*. Mitigation measures included in this PA/FEIS would reduce the number of individuals of the species that would be affected. Because these measures are intended to reduce threats to these species to minimize the likelihood of listing, these measures are in conformance with the MUC guidance in the CDCA Plan.

Unusual Plant Assemblages. No unusual plant assemblages have been identified on the Project site.

Vegetation Manipulation

Mechanical Control. Mechanical control may be allowed on Class L lands after consideration of possible impacts. Vegetation manipulation is defined in the CDCA Plan as removing noxious or poisonous plants from rangelands; increasing forage production; creating open areas within dense brush communities to favor certain wildlife species; or eliminating introduced plant species. During construction, O&M, and decommissioning phases, the Applicant would abide by noxious weed control procedures as developed in cooperation with the BLM. The establishment of noxious/invasive vegetation can be limited by early detection and eradication. The Applicant would finalize the site-specific Vegetation Management Plan, described in Section 2.3.1.4.11, *Vegetation Management and Fire Suppression*, prior to a ROW grant being issued. Such actions would be conducted as part of the Project. Vegetation management under the Vegetation Management Plan would conform to federal, state, and local regulations.

Chemical Control. Aerial broadcasting application of chemical controls is not be allowed on Class L lands. Noxious weed eradication may be allowed after site-specific planning. The Project would not include aerial broadcasting. As described in Section 2.3.1.4.11, *Vegetation Management and Fire Suppression*, a plan would be developed for control of noxious weeds and invasive species that could occur as a result of surface disturbance activities at the Project site.

The plan would address monitoring, education of operation and maintenance personnel on weed identification, the manner in which weeds spread, use of any pesticides, and methods for treating infestations. Vegetation would be managed with a BLM-approved herbicide in accordance with guidance provided in the BLM Programmatic EIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM, 2007b) and by the PSSCFO.

Exclosures. Exclosures may be allowed on Class L lands. Exclosure is a manipulation technique where livestock and certain wildlife species can be excluded from fenced areas. This procedure provides comparison data and is valuable in the determination of grazing effects of vegetation. The Project would not include exclosures.

Prescribed Burning. Prescribed burning may be allowed on Class L lands after development of a site-specific management plan. The Project would not include prescribed burning.

4.10.10.11 Land Tenure Adjustment

Class L land may be sold in accordance with FLPMA and other applicable federal laws and regulations. The Project would not involve the sale of any BLM-administered lands.

4.10.10.12 Livestock Grazing

Livestock grazing is allowed on Class L lands subject to the protection of sensitive resources. The Project would not involve livestock grazing.

4.10.10.13 Minerals

The Project would not involve the development of minerals on Class L lands.

4.10.10.14 Motorized Vehicle Access/Transportation

Pursuant to the CDCA MUC guidelines for Class L areas, new roads and ways may be developed under ROW grants or approved plans of operation, and periodic or seasonal closures or limitations of routes of travel may be required. The Project would not include new OHV designations. However, construction of the Project would result in short-term closures or access limitations to portions of OHV routes 660637, 660703, 660709, 660712, 660835, 660857, 660858, 660860, 661085, and 661089, and operation and maintenance of the Project would result in long-term closures of portions of OHV routes 660835 and 661085 as described in Section 4.14, *Recreation and Public Access (Off-Highway Vehicles)*.

4.10.10.15 Recreation

The Project would not involve use of the Project site for recreational uses.

4.10.10.16 Waste Disposal

The Project would not involve the development of waste disposal sites.

4.10.10.17 Wildlife Species and Habitat

Table 1 of the CDCA Plan includes a variety of guidelines associated with wildlife as follows:

> **Rare, Threatened, and Endangered Species, State and Federal.** In all MUC areas, all state and federally listed species and their critical habitat are to be fully protected. In addition, actions that may impact or jeopardize the continued existence of federally listed species require consultation with the USFWS in accordance with FESA §7. As evaluated in Section 4.4, *Biological Resources - Wildlife*, the desert tortoise is the only federally listed species potentially affected by the Project. Mitigation Measures developed as part of the Project would avoid, minimize, and/or compensate for potential effects to desert tortoise. As specified in the guideline, BLM will initiate formal consultation with the USFWS in accordance with FESA §7. BLM has worked with USFWS, CDFG, and the Applicant to develop protection and compensation measures for the desert tortoise. Therefore, the Project would comply with the guideline to provide full protection to the species.
>
>> ***Sensitive Species.*** On Class L lands, identified species are to be given protection in management decisions consistent with BLM's policy for sensitive species management, BLM Manual 6840. The objective of this policy is to conserve and/or recover listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. Several BLM-sensitive wildlife species present or likely to occur on habitat associated with the Project include, but are not limited to Mojave fringe-toed lizard, burrowing owl, Le Conte's thrasher, Golden Eagles, and migratory birds and bats. Those species that are likely to occur on the Project site would be protected under a number of mitigation measures meant to avoid, minimize, or compensate for impacts from the Project as discussed in detail in Section 4.4, *Biological Resources - Wildlife*.
>>
>> ***Predator and Pest Control.*** Control of depredation wildlife and pests is to be allowed on Class L lands in accordance with existing state and federal laws. As part of the Project, the Applicant would develop a litter control program that would be enforced during construction and operation and maintenance phases to reduce the likelihood that litter would attract predators (e.g., common raven) to the area and consequently increase the likelihood of predation on special status species (e.g., desert tortoise). Therefore, this guideline is applicable to these actions but is allowed subject to conformance with state and federal laws.
>
> **Habitat Manipulation.** The Project would not include habitat manipulation.
>
> **Reintroduction or Introduction of Established Exotic Species.** The Project would not include the reintroduction or introduction of exotic species.

4.10.10.18 Wetland/Riparian Areas

No wetlands or riparian areas are present on the Project site.

4.10.10.19 Wild Horses and Burros

No wild and free-roaming horses or burros are present on the Project site.

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4.11 Mineral Resources

4.11.1 Methodology for Analysis

Impacts of the Project on mineral resources were assessed based on the degree to which the Project would reduce the availability of mineral resource areas identified within the study area. Information on the type and extent of mineral resources present in the study area was described in the setting (Section 3.11, *Mineral Resources*) using applicable geologic maps and mineral resource databases. Construction, operation, maintenance, and decommissioning activities for the Project are analyzed in terms of their direct and indirect effects on existing mineral leases and claims, and the future availability of or access to areas containing mineral resources.

4.11.2 Applicant Proposed Measures

There are no APMs to address potential effects to mineral resources.

4.11.3 Alternative 1: Proposed Action

4.11.3.1 Direct Impacts

As discussed in Section 3.11, *Mineral Resources*, the Project site currently is not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals or mineral materials. However, during construction, operation, maintenance, and decommissioning of the Project, approximately 4,496 acres of land would be unavailable for mineral exploration or extraction. This would not directly affect locatable or leasable minerals because none are present on the Project site. However, the Project site is underlain by sand and gravel, which potentially could represent a source of saleable minerals or mineral materials if there is a sufficient local demand for construction aggregate.

The fact that the Project would make approximately 4,496 acres of land unavailable for the life of the Project represents a minor adverse impact on mineral resources for several reasons:

1. As discussed in Section 3.11, *Mineral Resources*, deposits of similar age and lithology that are likewise potential sources of sand and gravel are estimated to underlie 1,544,000 acres of eastern Riverside County.

2. There is no information to indicate that the sand and gravel underlying the site is unique, of higher quality, or any more marketable than other similar deposits that are widespread throughout eastern Riverside County.

3. There is an existing producer of sand and gravel located along Midland Road, in close proximity to the Blythe Landfill, which likely would be able to serve local future demand for sand and gravel.

4. Following the decommissioning of the Project, the land occupied by the Project would again be made available for applications to the BLM for exploration or production of aggregate construction materials.

4.11.3.2 Indirect Impacts

Indirect impacts could occur if Project-related closure or blockage of public roads or access routes reduces access to any off-site mineral resource areas. As discussed in Section 4.14, *Recreation and Public Access,* and Section 4.17, *Transportation and Traffic,* the Project would not block or otherwise impair access to a major public roadway. While the Project would interrupt several open OHV routes, the routes have low levels of usage for dispersed recreation. The presence of the Project would not prevent permitted prospectors or owners of mineral leases in the surrounding region from accessing areas outside the footprint of the Project, such as the McCoy Mountains because there are other routes available to access the surrounding mountains, and motorized travel would continue to be permitted to the public within wash open zones.

4.11.4 Alternative 2: Reduced Acreage

4.11.4.1 Direct and Indirect Impacts

Alternative 2 would cause the same types of mineral resource-related impacts as the Proposed Action, i.e., impacts related to the loss of availability of a known mineral resource that would be of value to the region and California residents and to the loss of availability of a locally important mineral resource recovery site for the duration of the Proposed Action. However, because the solar plant site would be smaller for Alternative 2 than for the Proposed Action, the construction, operation, maintenance, and decommissioning activities associated with Alternative 2 would affect and occupy a smaller area and, thereby, affect fewer potential mineral resources.

4.11.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.11.5.1 Central Route

Direct and Indirect Impacts

The Central Route would cause the same types of mineral resource-related impacts as the Proposed Action, although the location of the impacts associated with the proposed gen-tie line and access road route would be shifted to the west relative to the Proposed Action. The Central Route would be slightly shorter than the proposed gen-tie line and access road route. Consequently, activities associated with construction, operation, maintenance, and decommissioning of this Alternative would affect or occupy a slightly smaller area of potential mineral resources. Nonetheless, there would be no substantial difference between the Central Route and the Proposed Action.

4.11.5.2 Western Route

Direct and Indirect Impacts

The Western Route would cause the same types of mineral resource-related impacts as the Proposed Action. The Western Route would be slightly longer than the proposed gen-tie and access road route. Consequently, activities associated with construction, operation, maintenance, and decommissioning of the Western Route would affect or occupy a slightly larger area of potential mineral resources. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action.

4.11.6 Alternative 4: No Action Alternative

The baseline conditions associated with mineral resources would continue under the No Action Alternative. Under this Alternative, the footprint of the Project would remain available for applications to the BLM for solar development, mineral exploration, or other uses consistent with the CDCA Plan.

4.11.7 Cumulative Impacts

The geographic scope of cumulative effects with respect to mineral resources would include all areas underlain by sand and gravel within eastern Riverside County, as sand and gravel represents a potential source of saleable minerals or mineral materials. Projects that put land areas to other uses, such as urban development or the construction of energy facilities, could incrementally combine to reduce the availability of aggregate. Therefore, all of the other projects in the cumulative scenario are considered within the geographic scope of analysis. As discussed above, the Project would have a minor adverse impact on mineral resources since sand and gravel is a widespread resource that underlies most of the desert basins in the region. If the enXco, the BSPP, and all of the other projects in the cumulative scenario were to be implemented, the resulting loss of land could amount to as much as 316,675 acres, 225,000 of which would be for the purpose of renewable energy development. Although this represents a considerable amount of land, there are approximately 1,544,000 acres of land underlain by Quaternary geologic units within eastern Riverside County. Even if all projects were implemented and were in operation at the same time, over 1,200,000 acres would remain available for aggregate resource exploration and production.

4.11.8 Mitigation Measures

No mitigation measures are recommended.

4.11.9 Residual Impacts after Mitigation Incorporated

Because no mitigation measures are recommended, impacts to mineral resources would be the same as discussed in Section 4.11.3, *Alternative 1: Proposed Action*.

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4.12 Noise

This section describes the conditions related to noise that would occur during construction, operation, maintenance, and decommissioning of the Project and alternatives. Cumulative impacts and mitigation measures to reduce any cumulative impacts also are identified.

4.12.1 Methodology for Analysis

This analysis evaluates potential noise impacts of the Proposed Action and alternatives based on review of sensitive receptors, ambient noise levels, and projected noise levels that would be associated with construction, operation, maintenance, and decommissioning of the Project and alternatives. Impact discussions are based, in part, on the modeled noise levels of the Project as presented in an acoustical analysis provided by the Applicant (Tetra Tech EC, Inc., 2011) that was peer reviewed by BLM. The following methods were used to evaluate impacts.

4.12.1.1 Short-term Construction and Decommissioning Noise Impacts

Although there are no applicable local policies or standards available to judge the effects of short-term construction noise levels, the FTA has identified a daytime 8-hour L_{eq} level of 80 dBA as a noise level where adverse community reaction to short-term construction noise could occur (FTA, 2006). Therefore, noise levels at nearby sensitive receptor locations associated with short-term construction and decommissioning activities are compared to an 8-hour L_{eq} level of 80 dBA.

4.12.1.2 Long-term Operation and Maintenance Noise Impacts

The USEPA-recommended residential noise guideline is an L_{dn} of 55 dBA. This level is not a regulatory goal but is “intentionally conservative to protect the most sensitive portion of the American population” with “an additional margin safety” (USEPA, 1974). This analysis also identifies whether noise level increases associated with long-term operation and maintenance activities would exceed 3 dBA at sensitive receptor locations.

Vibration Impacts

A PPV threshold identified by Caltrans is used in this analysis to determine the level of vibration impacts related to adverse human reaction and risk of architectural damage to normal buildings.[1] The PPV threshold is 0.20 inches per second (in/sec) (Caltrans, 2004). This PPV level has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

1 Architectural damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile (Caltrans, 2004).

4.12.2 Applicant Proposed Measures

There are no APMs to address potential effects from noise.

4.12.3 Alternative 1: Proposed Action

4.12.3.1 Direct and Indirect Impacts

Construction

Construction of the Project is expected to occur over a period of 46 consecutive months. Unit 1 and associated linear facilities (e.g., gen-tie and access roads) would be constructed first, followed by the construction of Unit 2. Construction would likely occur in three phases. Phase 1 would consist of site preparation and construction of on-site infrastructure. The site would be prepared with the removal of vegetation, the compaction of soils, and any necessary grading. Construction of the on-site infrastructure would include the main access road, stormwater containment, fencing, etc. Phase 2 would include the construction of the generating equipment, which would involve on-site trenching and installation of electrical collection systems, installation of PV arrays, foundation construction and tracker installation, PV array installation on the tracker systems, and construction of the on-site substations. Phase 3, which would occur concurrently with Phases 1 and 2, would include the construction of the interconnection infrastructure for connection to the CRS, including construction of the proposed gen-tie line and telecommunications line, the switchyard, and the distribution line.

Noise levels that would be associated with construction of the Project were evaluated using a screening-level analysis approach. The calculation methodology required knowledge of the numbers and types of proposed construction equipment as well as the typical noise source levels associated with each piece of equipment to determine the composite sound levels for standard distances of 50 feet and 1,000 feet from the construction activities. The composite noise levels were calculated assuming that all of the equipment would operate simultaneously at maximum load usage, to ensure a conservative screening level assessment. Table 4.12-1 summarizes results of the assessment by construction phase in terms of L_{max} noise levels.

Noise level exposures would fluctuate, depending on the construction activity, equipment type, and distance between noise sources and receptors. Noise from construction equipment would vary depending on the construction phase and the number and class of equipment that would operate at a location at any given time. Based on the noise levels provided in Table 4.12-1, maximum noise levels from construction activities that could occur at the solar plant site would be approximately 33 dBA at the closest identified residence located 2.6 miles away, and noise levels from construction activities associated with the gen-tie and access road would be approximately 46 dBA at the closest residence located approximately 0.6 mile from the proposed route.

In addition to on-site construction equipment noise levels, off-site traffic associated with Project construction activities would contribute to overall environmental noise levels. As described in Section 4.17, *Transportation and Traffic*, construction-related traffic would be expected to result

TABLE 4.12-1
REPRESENTATIVE L_{MAX} CONSTRUCTION NOISE LEVELS BY CONSTRUCTION PHASE

Phase No.	Construction Phase	Example Construction Equipment	Equipment Noise Level at 50 feet, dBA	Composite Noise Level at 50 feet, dBA	Composite Noise Level at 1,000 feet, dBA
1	Mobilization, Site Preparation, and Grading	Backhoe Fork Lift Dozer Excavator Grader Loader Roller Scraper Trencher Water Truck Portable Generator Flatbed Truck Heavy Duty Delivery Truck Light Weight Truck	80 80 85 85 85 80 85 85 73 80 82 75 85 75	94	59
2	PV Solar Array Installation and Substation Construction	Backhoe Crane Vibratory Post Driver Fork Lift Dozer Excavator Grader Loader Scraper Trencher Water Truck Portable Generator Flatbed Truck Heavy Duty Delivery Truck Light Weight Truck	80 85 90 80 85 85 85 80 85 73 80 82 75 85 75	96	61
3	Interconnection infrastructure, including Gen-Tie and Telecommunications Lines	Crane Vibratory Post Driver Fork Lift Loader Trencher Water Truck Portable Generator Flatbed Truck Heavy Duty Delivery Truck Light Weight Truck	85 90 80 80 73 80 82 75 85 75	93	59

SOURCE: Tetra Tech, 2011.

in up to 360 peak-hour trips along I-10, east of Mesa Drive. This would represent a 12 percent increase in peak-hour traffic along I-10, which would be expected to increase ambient noise levels along I-10 by less than 1 dBA, which would not be perceivable.

Project construction-related traffic along Black Rock Road and the BSPP access road, which would be shared with the Project, would be expected to result in up to 600 peak-hour trips. The closest residence to the applicable segment of Black Rock Road is located south of I-10 at a distance of 500 feet, and the closest residence to the BSPP access road is at a distance of approximately 0.5 mile. The Federal Highway Administration Traffic Noise Model (TNM) Version 2.5 Lookup Tables were used to estimate the noise level that would be associated with the 600 peak-hour trips. Assuming that approximately 20 percent of the trips would be medium trucks and 80 percent would be standard automobiles, all traveling at 60 miles per hour, the modeling results indicate that Project-related peak-hour traffic noise would be up to 48 dBA L_{eq} at 500 feet from the centerline of Black Rock Road and the BSPP access road. This noise level would likely be indistinguishable from I-10 traffic noise along Black Rock Road, and the noise level at the nearest residence along the BSPP access road would be substantially less given that the closest residence to the BSPP access road is much farther than 500 feet. On-site and off-site short-term Project-related noise would result in noise levels at the nearest sensitive receptor locations that would be substantially less than 80 dBA L_{eq}.

Temporary sources of groundborne vibration and noise during construction would result from operation of conventional heavy construction equipment such as graders, bulldozers, and loaded haul trucks. These pieces of equipment can generate vibration levels of up to 0.09 in/sec at a distance of 25 feet (Caltrans, 2004). However, vibration levels attenuate rapidly from the source. At a distance of 0.6 mile, which is the approximate distance between the closest residences and any of the Project components involving active heavy construction equipment, vibration would not be perceivable.

Groundborne noise is the rumbling sound of structure surfaces caused by high vibration levels. Because Project construction would not result in exposure of persons to or generation of excessive groundborne vibration, it also would not expose them to or generate excessive groundborne noise levels.

Operation and Maintenance

The Project would result in five potential sources of long-term noise, including operation of the solar power plant equipment, the on-site substations, on-site maintenance activities, off-site commuting workers and delivery trips, and gen-tie corona noise. Below are discussions of the noise effects that would be associated with each of the long-term noise sources.

Solar Power Plant Site

The proposed PV solar arrays would be organized in 2 MW blocks consisting of PV modules and a power conversion station (PCS). The main sources of noise associated with each PCS would be the cooling-ventilation fans, the electrical components of the inverters, and the step-up transformers that would service each inverter cluster.

In addition to the PCS sound sources, the on-site substations would have switching, protection, and control equipment and transformers, which would generate a sound that could generally be described as a low humming. There would be three main sound sources associated with a transformer, including core noise, load noise, and noise generated by the operation of the cooling equipment. The core noise would be the principal noise source and would not vary significantly with electrical load. Load noise primarily would be caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound would be twice the supply frequency; i.e., 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. Cooling equipment (i.e., fans and pumps) noise would be comparatively lower and generally would be considered secondary to the sound produced by the core and load. Breaker noise would be very short duration sound events, expected to occur only a few times throughout the year.

DataKustic GmbH's CadnaA (v 4.2.139), a computer-aided noise abatement program, was used to conduct the operational acoustic modeling analysis associated with the solar power plant equipment. CadnaA is a comprehensive three-dimensional acoustic software model that conforms to the Organization for International Standardization standard 9613-2 *Attenuation of Sound during Propagation Outdoors*. The engineering methods specified in this standard consist of full (1/1) octave band algorithms that incorporate geometric spreading due to wave divergence, reflection from surfaces, atmospheric absorption, screening by topography and obstacles, ground effects, source directivity, heights of both sources and receptors, seasonal foliage effects, and meteorological conditions.

Noise sound power data for the inverters and transformers were obtained from the Applicant and used as input for the modeling analysis. Solar plant site components, including all PCSs and on-site substations, were assumed to be operating concurrently for 100 percent of the time, which is an extremely conservative assumption given that solar PV facilities only produce electricity during the daylight hours. After sunset, when the plant no longer receives solar radiation, the inverters would produce noise that would be minimally perceivable and the transformers would be energized, but would likely operate under low noise conditions using natural draft cooling (i.e., no fans) due to reduced nighttime heat loads. A three-dimensional rendering of the facility was created directly from the preliminary site plan drawing by defining the height and extent of all modeled noise sources. Sound power levels were assigned for each source in a manner that best represents their expected acoustic performance and were inclusive of a standardized engineering safety factor.

Sound level results from the acoustic modeling are in 5 dBA increments projected on a scaled USGS orthophoto map, as presented in Figure 4.12-1. The sound contour isopleths are plotted at a height of 1.52 meters above ground level, which is approximately the ear height of a standing person. Received sound levels were also evaluated at discrete receptor locations (i.e., existing residences) as shown in Table 4.12-2.

Table 4.12-2 shows that solar plant operation sound levels at the nearest residences would be low, likely due to a combination of the low-level noise generated by the Project and the substantial distance between the solar plant site and the closest residences. In summary, the results of the acoustic modeling analysis demonstrates that the solar power plant site would operate well within USEPA noise guidelines at all existing residences. In addition, noise levels associated with the solar power plant would be well below ambient conditions at the nearest sensitive receptors,

TABLE 4.12-2
SUMMARY OF SOLAR PLANT ACOUSTIC MODELING RESULTS

Receptor ID	UTM Coordinates (meters)		Received Sound Level (dBA)
	Easting	Northing	
4	714947	3734539	12
11	715279	3730900	13
12	716179	3730280	9
13	713965	3727803	10
14	712707	3725162	10
15	712420	3724507	6
16	712509	3724597	9
261	709207	3724642	11
262	709822	3724483	10
263[a]	---	---	14

NOTE: Only receptors with received sound levels greater than 0 dB are included in the table.

[a] Receptor ID 263 was not included in the Tetra Tech acoustical analysis, but has been added to this table and Figure 4.12-1 for full disclosure. The received sound level has not been modeled for this receptor; however, the received sound level has been estimated based on the distance from Receptor ID 263 to the Project site and the modeled received sound levels at the other receptors.

SOURCE: Tetra Tech EC, Inc., 2011.

measured to average 36 dBA L_{eq} during nighttime hours (see Table 3.12-1). It is unlikely that the solar plant would be audible at the nearest residence locations.

On-Site Maintenance Activities

Implementation of the Project would require approximately 20 permanent employees that would work at the solar plant site. The employees would inspect components of the solar farm, perform preventive maintenance, and conduct PV panel washing twice a year. In addition, some amount of unscheduled maintenance and repair would likely be necessary. These maintenance-related activities would not be expected to be audible at the nearest sensitive receptor locations.

Off-Site Commuting Employee Traffic

Traffic associated with operation and maintenance activities generally would relate to the 20 workers traveling to and from the solar plant site each day. In addition, it is estimated that approximately four daily truck deliveries to the solar plant site would be required. This would result in a total of 48 additional daily trips (24 roundtrips) on the local roadways and highways, which do not occur under existing conditions. The addition of these trips on local roadways would not result in a perceivable increase in average ambient noise levels at sensitive receptor locations.

Gen-Tie Line Corona Noise

The term corona is used to describe the breakdown of air into charged particles caused by the electrical field at the surface of a conductor. Audible noise levels generated by corona discharge vary depending on weather conditions as well as the voltage and condition of the line. Wet weather conditions often increase corona discharge due to accumulation of raindrops, fog, frost, or condensation on the conductor surface, which causes surface irregularities thereby promoting corona discharge. Corona noise levels for a transmission line with similar voltage (220 kV) as the proposed 230 kV gen-tie line have been estimated to be approximately 30 dBA at the edge of the transmission line ROW during dry conditions (CPUC, 2010). During adverse weather conditions such as fog or rain, which are rare in the study area, corona discharge could be up to 20 dBA higher than in dry conditions. Therefore, under worst-case conditions, corona noise could be as high as 50 dBA at the edge of the proposed gen-tie line ROW.

The nearest residence along the proposed gen-tie line route is at a distance of approximately 0.6 mile. Assuming a maximum noise level of 50 dBA at the edge of the ROW during wet weather conditions and accounting for how noise levels from line sources attenuate over soft surfaces, maximum corona noise at the nearest residence could be as high as 32 dBA L_{eq} or 38 dBA L_{dn}. Therefore, corona noise levels that would be associated with the proposed gen-tie line would not conflict with USEPA noise guidelines for residences (i.e., 55 dBA L_{dn}). In addition, Project-related corona noise levels would be expected to be below ambient levels at the nearest residences, which have been measured to average 36 dBA L_{eq} during nighttime hours (see Table 3.12-1).

Vibration

Operation and maintenance of the Project would not introduce any new sources of perceivable groundborne vibration to the study area. Consequently, the Project would cause no operation- or maintenance-related adverse effects associated with groundborne vibration. Because implementation of the Project would not result in exposure of persons to or generation of excessive groundborne vibration, it also would not expose them to or generate excessive groundborne noise levels.

Decommissioning

At the end of the 30-year term of the BLM ROW grant, Project operation would cease and associated facilities would be decommissioned and dismantled, and the site would be restored over a period of approximately 24 months. Decommissioning activities could generate temporary noise levels similar to those that would occur during construction of the Project (i.e., up to approximately 46 dBA at the closest residence). On-site and off-site short-term decommissioning-related noise levels would result in noise levels at the nearest sensitive receptor locations that would be substantially less than 80 dBA L_{eq}.

Temporary sources of groundborne vibration and noise during decommissioning would result from operation of conventional heavy construction equipment, which can generate vibration levels of up to 0.09 in/sec at a distance of 25 feet (Caltrans, 2004). However, vibration levels attenuate rapidly from the source. At a distance of 0.6 mile, which is the approximate distance between the closest residences and any of the Project components involving active heavy construction equipment, vibration would not be perceivable.

Groundborne noise is the rumbling sound of structure surfaces caused by high vibration levels. Because construction and decommissioning of the Project would not result in exposure of persons to or generation of excessive groundborne vibration, it also would not expose them to or generate excessive groundborne noise levels.

4.12.4 Alternative 2: Reduced Acreage

Construction

Construction of Alternative 2 would occur over a period of approximately 24 consecutive months. The closest sensitive receptor to the Alternative 2 solar plant is a residence, approximately 2.9 miles to the south-southeast. Based on the construction equipment composite noise levels that assume all of the equipment would operate simultaneously at maximum load usage (see Table 4.12-1) maximum noise levels from construction activities that could occur at the Alternative 2 solar plant site would be approximately 31 dBA at the closest identified residence, which would be approximately 2 dBA less than the maximum noise level that would occur at the nearest residence to the Project solar plant site. All other construction noise and vibration levels that would be associated with Alternative 2 (e.g., construction of the gen-tie and access road, construction related traffic, groundborne vibration, etc.) would be the same as under the Proposed Action; however, all construction-related noise and vibration levels would cease at the end of the 24-month construction period, which would be 22 months less than the construction period that would occur under the Proposed Action. On-site and off-site short-term noise under Alternative 2 would result in noise levels at the nearest sensitive receptor locations that would be substantially less than 80 dBA L_{eq}.

Temporary sources of groundborne vibration during construction of Alternative 2 would not be perceivable.

Operation and Maintenance

As described above, the closest sensitive receptor to the Alternative 2 solar plant is a residence, approximately 2.9 miles to the south-southeast, which is approximately the same distance from Receptor ID 11 to the Proposed Action solar plant site. Therefore, it is assumed that the modeled received solar plant sound level at Receptor ID 11 under the Proposed Action (i.e., 13 dBA) would be the same as the received sound level at the closest sensitive receptor to the Alternative 2 solar plant site (see Table 4.12-1), which would approximately 1 dBA less than the received sound level at the closest sensitive receptor under the Proposed Action. The Alternative 2 solar power plant site would operate well within USEPA noise guidelines at all existing residences. In addition, noise levels associated with the solar power plant would be well below ambient conditions at the nearest sensitive receptors, measured to average 36 dBA L_{eq} during nighttime hours (see Table 3.12-1). It is unlikely that the solar plant under Alternative 2 would be audible at the nearest residence locations.

All other operation and maintenance noise and vibration levels that would be associated with Alternative 2 (i.e., on-site maintenance, off-site commuting of employee traffic, gen-tie line corona noise, and groundborne vibration) would be the same as under the Proposed Action.

Decommissioning

Decommissioning activities under Alternative 2 could generate temporary noise and vibration levels similar to those that would occur during construction of Alternative 2.

4.12.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.12.5.1 Central Route

Construction

The distance to the closest sensitive receptor (i.e., a residence) to the portion of the Central Route that varies from the proposed gen-tie line route would be approximately 0.4 mile (2,100 feet). This would be a shorter distance to a residence compared to the portion of the Proposed Action gen-tie line that varies from the Central Route, which would be approximately 0.8 mile (4,200 feet) from a residence. Based on the construction equipment composite noise levels that assume all of the equipment would operate simultaneously at maximum load usage (see Table 4.12-1), maximum noise levels at the closest residence that would be associated with construction activities of the Central Route would be 51 dBA, which would approximately 8 dBA higher than the maximum noise level that would occur at the same residence under the Proposed Action. All other construction noise levels that would be associated with the Central Route (e.g., construction related traffic, etc.) would be the same as under the Proposed Action. Although vibration levels may be slightly elevated due to construction of the Central Route compared to under the Proposed Action, they would still be inaudible.

On-site and off-site short-term noise would result in noise levels at the nearest sensitive receptor locations that would be substantially less than 80 dBA L_{eq}.

Temporary sources of groundborne vibration during construction of the Central Route would not be perceivable.

Operation and Maintenance

As described above, the distance to the closest sensitive receptor (i.e., a residence) to the portion of the Central Route that varies from the proposed gen-tie line route would be approximately 0.4 mile (2,100 feet), which would be approximately half the distance to a residence compared to the portion of the Proposed Action gen-tie line that varies from the Central Route. Based on the conservative assumption that corona noise could be as high as 50 dBA at the edge of the proposed gen-tie line ROW (CPUC, 2010), corona noise from the Central Route could be as high as 35 dBA L_{eq} or 41 dBA L_{dn}, which would be approximately 3 dBA higher than the maximum noise level that would occur at the same residence under the Proposed Action. However, Central Route corona noise would not conflict with USEPA noise guidelines for residences (i.e., 55 dBA L_{dn}). In addition, corona noise levels associated with the Central Route would be expected to be below ambient levels at the nearest residence, which has been measured to average 36 dBA L_{eq} during nighttime hours (see Table 3.12-1). Corona noise levels that would be associated with the Central Route gen-tie line would have a negligible effect on nearby residences.

All other operation and maintenance noise and vibration levels that would be associated with the Central Route (e.g., maintenance, etc.) would be the same as under the Proposed Action .

Decommissioning

Decommissioning activities that would be associated with the Central Route could generate temporary noise and vibration levels similar to those that would occur during construction of the Central Route.

4.12.5.2 Western Route

Construction

The distance to the closest sensitive receptor (i.e., a residence) to the portion of the Western Route that varies from the proposed gen-tie line route would be approximately 0.5 mile (2,600 feet). This would be a shorter distance to a residence compared to the portion of the Proposed Action gen-tie line that varies from the Western Route, which would be approximately 0.8 mile (4,200 feet) from a residence. Based on the construction equipment composite noise levels that assume all of the equipment would operate simultaneously at maximum load usage (see Table 4.12-1), maximum noise levels at the closest residence that would be associated with construction activities of the Western Route would be 48 dBA, which would approximately 5 dBA higher than the maximum noise level that would occur at the same residence under the Proposed Action. All other construction noise levels that would be associated with the Western Route (e.g., construction related traffic, etc.) would be the same as under the Proposed Action. Although vibration levels may be slightly elevated due to construction of the Western Route compared to under the Proposed Action, they would still be inaudible. On-site and off-site short-term noise would result in noise levels at the nearest sensitive receptor locations that would be substantially less than 80 dBA L_{eq}.

Temporary sources of groundborne vibration during construction of the Western Route would not be perceivable.

Operation and Maintenance

As described above, the distance to the closest sensitive receptor (i.e., a residence) to the portion of the Western Route that varies from the proposed gen-tie line route would be approximately 0.5 mile (2,600 feet), which would be approximately 1,200 feet closer to a residence compared to the portion of the Proposed Action gen-tie line that varies from the Western Route. Based on the conservative assumption that corona noise could be as high as 50 dBA at the edge of the proposed gen-tie line ROW (CPUC, 2010), corona noise from the Western Route could be as high as

33 dBA L_{eq} or 39 dBA L_{dn}, which would be approximately 1 dBA higher than the maximum noise level that would occur at the same residence under the Proposed Action. However, Western Route corona noise would not conflict with USEPA noise guidelines for residences (i.e., 55 dBA L_{dn}). In addition, corona noise levels associated with the Western Route would be expected to be below ambient levels at the nearest residence, which has been measured to average 36 dBA L_{eq} during nighttime hours (see Table 3.12-1).

All other operation and maintenance noise and vibration levels that would be associated with the Western Route (e.g., maintenance, etc.) would be the same as under the Proposed Action .

Decommissioning

Decommissioning activities that would be associated with the Western Route could generate temporary noise and vibration levels similar to those that would occur during construction of the Western Route.

4.12.6 Alternative 4: No Action Alternative

Under the No Action Alternative, noise and vibration levels in the vicinity of the Project site would not be expected to change noticeably from existing conditions.

4.12.7 Cumulative Impacts

Noise levels tend to diminish quickly with distance from a source; therefore, the geographic scope for cumulative impacts associated with noise would be limited to projects located within approximately 0.5 mile of the Project. The temporal scope for cumulative impacts associated with noise would include the construction, operation, maintenance, and decommissioning phases of the Project.

Project construction and decommissioning activities would result in short-term noise impacts at the nearest residence locations, and long-term operation- and maintenance-related impacts associated with the Project would result in permanent noise sources. The Project would have no vibration- or groundborne noise-related impacts.

There are several projects within 0.5 mile of the Project that are reasonably foreseeable and could be constructed and operated simultaneously with the Project. These projects include the enXco McCoy solar project, the BSPP, the Colorado River Substation Expansion project, CUP03602 PV solar project, and the Palo Verde 2 concentrated solar power project. It is possible that construction and operation of these solar projects and the substation expansion project could occur at the same time as construction of the Project. However, except for the BSPP, the other cumulative projects would be at similar or greater distances from the existing sensitive receptor locations that would experience negligible noise levels from construction, operation, maintenance, and decommissioning of the Project. Therefore, it is unlikely that Project-related noise levels and other project noise levels would result in a combined noise level that would cause an adverse effect.

The BSPP is proposed to be closer to the residences that would experience some noise from the Project. The PA/FEIS for the BSPP identified the highest noise level at the closest residence would be 61 dBA L_{eq} during construction and decommissioning, and 40 dBA L_{eq} during operation and maintenance. The noise levels at the same residence under the Project would be up to 33 dBA L_{eq} during construction and decommissioning and 13 dBA L_{eq} during operation and maintenance. Adding the Project noise levels to the BSPP noise levels would not result in an adverse cumulative noise increase.

4.12.8 Mitigation Measures

None recommended.

4.12.9 Residual Impacts after Mitigation Incorporated

There would be no residual adverse impacts after mitigation has been incorporated.

4.13 Paleontological Resources

4.13.1 Methodology for Analysis

This analysis of potential effects of the Proposed Action and Alternatives on paleontological resources is based on a review of relevant literature and site-specific information provided by the Applicant. A paleontological literature and records search was conducted by the Vertebrate Paleontology Section of the LACM and the Department of Earth Sciences at the San Bernardino County Museum. The results of the literature and records search and the paleontological resources survey are presented in the following report:

SWCA, 2011. Paleontological Resources Assessment for the McCoy Solar Energy Project, Riverside County, California.

The information was used to assign geologic units within the area to a PFYC class, in accordance with BLM protocol. The study area for the analysis of potential effects of the Proposed Action and alternatives on paleontological resources includes the zone of expected surface disturbance and the stratigraphic context in which fossils are located.

Surface disturbing actions have the potential to impact surface and subsurface paleontological resources in rock units and overlying sediments known to contain such resources. Direct impacts include destruction due to breakage and fragmentation and loss of context in the stratigraphic record; indirect impacts may result from increased accessibility to paleontological resources resulting in an increased likelihood of looting or vandalism. Cumulative impacts could result from the Project in combination with other past, present, or reasonably foreseeable future projects' incremental contributions to impacts on paleontological resources located in Holocene alluvium, Pleistocene alluvium, and dry desert washes throughout eastern Riverside County. All impacts would result in a permanent loss of scientific information that might otherwise have been gained through preservation, recovery, and/or salvage of fossil resources.

4.13.2 Applicant Proposed Measures

The following APMs have been developed to reduce the potential adverse impacts on paleontological resources.

Paleo-1. To address potential paleontological impacts during the pre-construction phase:

a) Prior to the start of any Project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that a qualified paleontologist is available for field activities and is prepared to implement the conditions of approval. The qualified paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work.

b) Prior to the start of construction, the qualified paleontologist shall prepare a worker's environmental awareness training program. The paleontological training program shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The training program shall be presented by a qualified paleontologist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Paleo-2. To address potential paleontological impacts during the construction phase:

a) The qualified paleontologist or paleontological monitor shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas with a significant potential for fossil-bearing sediments to occur. All ground-disturbing activities in areas determined to have a high sensitivity shall be monitored on a full-time basis at the start of the Project. All ground disturbances in areas determined to have low to high sensitivity at depths of 1.5 m (5 feet) or greater shall also require monitoring on a full-time basis, initially. If no significant fossils are found, then the frequency of monitoring shall be adjusted at the discretion of the qualified paleontologist after an adequate amount of time is spent observing the geologic deposits in the project area. No monitoring is required in areas determined to have a low sensitivity.

b) Paleontological monitoring will include inspection of exposed rock units and collection of matrix to be tested for the presence of microscopic fossils. Paleontological monitors will have authority to temporarily divert excavations or drilling away from exposed fossils in order to efficiently and professionally recover the fossil specimens and collect associated data. Any paleontological fieldwork occurring on lands administered by the BLM would require a Paleontological Resources Use Permit issued by the BLM state office.

Paleo-3. To address potential paleontological impacts during the post- construction phase:

The Project owner shall ensure preparation of a paleontological resources monitoring report by the qualified paleontologist. The report shall be completed following the analysis of any recovered fossil materials and related information. The report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; and a statement by the qualified paleontologist that project impacts to paleontological resources have been mitigated.

4.13.3 Alternative 1: Proposed Action

4.13.3.1 Direct and Indirect Impacts

Construction

Project construction would include the following earth disturbing activities: 1) grading of access roads, the gen-tie line, building foundations, parking areas, and the solar plant site substations; 2) foundation excavation for concrete tower structures and various facilities; 3) trenching for conduit and a telecommunication line; and 4) steel pile installation for the solar trackers. These activities are expected to result in the disturbance of approximately 4,487 acres of land (some of the area within the Unit 2 fence would remain undisturbed). No significant paleontological resources were identified within the Project site during the course of the field survey. However, based on the geological setting, the museum records search, and PFYC criteria, the site is underlain either at the surface or within shallow depths by a Class 3(a) geologic unit (i.e., Pleistocene alluvium). Because Pleistocene alluvium is mapped at the surface within the western portion of the proposed solar field site and various portions of the gen-tie line, shallow excavations have the potential to disturb yet unknown or undiscovered but potentially significant fossil resources. Younger alluvium, eolian sand, and modern wash deposits, which predominantly underlie the eastern part of the solar plant site, and portions of the gen-tie line, are units with a PFYC of Class 2. However, because these units are frequently underlain by older sedimentary deposits at undetermined but potentially shallow depths, deeper excavations exceeding 5 feet within these areas also could uncover yet unknown undiscovered but potentially significant fossil resources.

In order to address this issue, the Applicant has proposed APMs Paleo-1 through Paleo-3, which are to be implemented as part of the Project, and which would reduce impacts to sensitive paleontological resources throughout the Project site. These APMs are described in Section 4.13.2 and would: 1) require a worker environmental training program to be established and administered by a qualified paleontologist prior to the start of construction; 2) ensure that the qualified paleontologist is present for all earth disturbing work in sensitive paleontological areas (geologic units with PFYC Class 3(a)); and 3) ensure a paleontological monitoring report is completed by the qualified paleontologist at the end of construction that summarizes all Project construction-related impacts to paleontological resources. These measures would effectively identify fossil resources in the field during construction, and would ensure that their status is evaluated by qualified personnel, recorded, and recovered if appropriate. Implementation of the Project and associated APMs would result in the avoidance or substantial reduction of adverse impacts to paleontological resources. Should unique fossil resources be salvaged during Project-related grading and construction, implementation of the APMs would result in an improved scientific understanding of the natural history and geology of the area that would not have been gained otherwise.

One caveat of the aforementioned APMs is that they may not be sufficient to completely avoid or eliminate potential impacts on paleontological resources resulting from the use of invasive construction methods such as vehicle-mounted power augers or blasting. Power augers may be used for steel pile installations along the gen-tie line and for the solar trackers and, if geologic conditions warrant, blasting might be used to loosen soil and rock that are a challenge to excavate. As opposed to soil excavations using backhoes, use of power augers or blasting means that site workers and/or paleontological monitors may be unable to identify fossil resources prior to their disturbance or destruction. While intact fossils still may be found in drill cuttings, and fossils damaged by excavation equipment can sometimes be repaired in a laboratory, the nature of some of the construction methods to be used on-site means that implementation of the APMs may be unable to avoid impacts on paleontological resources.

Given that 1) the APMs include multiple measures to avoid damage to fossil resources, including active monitoring, 2) much of the Project-related excavations would utilize backhoes, and 3) the value of paleontological resources is predicated on their discovery within a specific geologic host unit, construction of the Project could result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be identified, studied, and if appropriate, recovered and preserved.

Operation and Maintenance

Operation and maintenance of the Project would not impact paleontological resources because no earth disturbance would occur as a result of these activities.

Decommissioning

Decommissioning and closure of the Project site would not impact paleontological resources. The ground disturbed during these activities already would have been disturbed during construction and subjected to the APMs identified in Section 4.13.2.

4.13.4 Alternative 2: Reduced Acreage

Alternative 2 would cause the same type of paleontological resource-related impacts (beneficial and adverse) as the Proposed Action. However, because the solar plant site would be smaller for Alternative 2 than for the Proposed Action, construction activities would affect a smaller area and, thereby, affect fewer locations where paleontological resources may be found. For the same reasons as for the Proposed Action, Alternative 2 would cause no impact to paleontological resources during operation, maintenance, or decommissioning.

4.13.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.13.5.1 Central Route

The Central Route would cause the same types of paleontological resource-related impacts as the Proposed Action, although the location of the impacts associated with the proposed gen-tie route would be shifted to the west relative to the Proposed Action. The Central Route would be incrementally shorter than the proposed gen-tie and access road route, and so its construction would affect a slightly smaller area within which potential paleontological resources could be found. Nonetheless, there would be no substantial difference between the Central Route and the Proposed Action.

4.13.5.2 Western Route

The Western Route would cause the same types of paleontological resource-related impacts as the Proposed Action. The Western Route would be incrementally longer than the proposed gen-tie and access road route, and so its construction would affect a slightly larger area within which potential paleontological resources could be found. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action.

4.13.6 Alternative 4: No Action Alternative

Under the No Action Alternative, soils underlying the Project site would remain subject to the existing level of disturbance, resulting in no change relative to baseline conditions. Alternative 4 would cause no adverse impact to paleontological resources. However, the potential benefits associated with the discovery, study and preservation of paleontological resources that could occur as a result of the Project would not be realized.

4.13.7 Cumulative Impacts

All projects in the cumulative scenario that would be located on the same geologic units within eastern Riverside County, including Holocene alluvium, Pleistocene alluvium, and dry desert washes, are considered within the geographic scope of analysis with respect to cumulative impacts on paleontological resources. This is because the ground disturbance caused by individual projects in the cumulative scenario, if not properly mitigated, could combine to cause a cumulative loss of scientific information through disturbance or destruction of potentially significant fossil resources. Since these geologic units are ubiquitous across the interior drainage basins of the desert region, all projects listed in Tables 4.1-3 and 4.1-4 could cause impacts that may combine. As described in Section 3.11, *Mineral Resources*, approximately 1,544,000 acres within eastern Riverside County are underlain by the same geologic units that would be disturbed by the Project. In combination, all projects in the cumulative scenario total 316,675 acres, representing as much as 21 percent of the geographic scope of the cumulative analysis. Projects in the cumulative scenario could affect paleontological resources regardless of their timing.

Cumulative conditions related to paleontological resources involve the loss of non-recoverable scientifically important fossils and associated data, and the incremental loss to science and society of these resources over time. Energy development projects have resulted in cumulative conditions affecting paleontological resources in eastern Riverside County. However, the implementation of protective measures such as the APMs that would be implemented as part of the MSEP and mitigation measures designed to protect paleontological resources during surface disturbing projects has resulted in the salvage and permanent preservation of scientifically significant resources that otherwise would have been destroyed or remain undiscovered. This has substantially reduced the cumulative effects of such projects on paleontological resources, and has resulted in the beneficial cumulative effect of making these fossils available for scientific research and education by placing them in museum collections.

Excavation activities associated with the Project in conjunction with other projects in the area could contribute to the progressive loss of sensitive paleontological resources. However, with incorporation of APMs Paleo-1, Paleo-2 and Paleo-3, the Project would either avoid nearly all impacts to fossil resources, or result in the recovery of scientific data should previously unrecorded fossils of significance be uncovered. Nonetheless, some fossil disturbance could be associated with Project-related installation of steel pile foundations, inadvertent damage caused by excavation equipment, or the failure of paleontological monitors to identify fossils. These incremental impacts of the Project could combine with the adverse impacts of other projects in the cumulative scenario; however, they would very minor and would not outweigh the potentially positive impacts associated with the potential for the Project's recovery of fossils that would be of value to the scientific community.

4.13.8 Mitigation Measures

None recommended.

4.13.9 Residual Impacts after Mitigation Incorporated

Because no mitigation measures are recommended, impacts to paleontological resources would be the same as discussed in Section 4.13.3, *Alternative 1: Proposed Action*.

4.14 Recreation and Public Access (Off-Highway Vehicles)

4.14.1 Methodology for Analysis

This section analyzes potential effects of the Proposed Action and Alternatives related to recreation and OHV use. This analysis of potential effects on recreation assesses the impacts to land acreage as well as types of known recreational uses including hiking, backpacking and long-term camping in established federal, state, or local recreation areas and/or wilderness areas. The CDCA Plan recognizes that the California Desert is "a reservoir of open space and as a place for outdoor recreation." (BLM, 1980, p. 69). The CDCA Plan notes that the diverse landscape of the California desert provides for a variety of physical settings. Further, the CDCA Plan identifies the wide variety of desert recreation uses, ranging from off-road vehicles to outdoor preservationists, and the increasing challenge to accommodate these varied and sometimes competing uses. For example, LTVA visitors typically enjoy backcountry vehicle touring on routes and washes and in the surrounding areas and would therefore be affected by the closures of open vehicle routes in the vicinity of the Project. The CDCA Plan and NECO Plan Amendment, which includes a detailed inventory and designation of open routes in the vicinity of the Project, were reviewed to determine impacts to open routes.

4.14.2 Applicant Proposed Measures

There are no APMs to address potential effects to recreation and public access.

4.14.3 Alternative 1: Proposed Action

4.14.3.1 Direct and Indirect Impacts

OHVs

Construction and Decommissioning

During the construction phase, construction of the gen-tie line and access road route would traverse several designated OHV routes and would require short-term closures or access limitations to portions of the following OHV routes: 660637, 660703, 660709, 660712, 660835, 660857, 660858, 660860, 661085, and 661089.

Mitigation Measure REC-1 would reduce temporary, construction-related recreation impacts by requiring that the Applicant post interpretative materials about the Project at nearby LTVAs, campgrounds, and BLM kiosks. This material would include construction schedules and safety information regarding trucks and other heavy equipment use on local roads. In addition, Mitigation Measure REC-2 would require the Applicant to coordinate construction activities with the AO for nearby recreation areas and schedule construction to avoid heavy recreational use periods. Construction equipment would also be required to be located in areas that would avoid temporary closure of or preclusion of access to recreation areas. Mitigation Measure REC-3 would reduce construction-related impacts to public access by requiring that the Applicant coordinate any temporary closure of any NECO Plan-designated open routes with the AO if the route is deemed unsafe to use during construction. The Applicant would be required to post a public notice of the temporary route closure.

Operation and Maintenance

The Project site is traversed by one major designated OHV route, No. 661085, which is a north/south link between I-10 and Arlington Mine Road to the north of the Project site. It also provides access to lands identified as having wilderness characteristics. This route provides access for both street-legal and non-licensed OHVs that are not permitted to travel on the paved county-maintained Midland Road. Closure of the approximately 2 miles of this route within the Project site during the operation and maintenance phase of the Project would impact the ability of OHVs to travel in this area and would additionally eliminate a link that forms a looped route around the east and west sides of the Palen-McCoy and the Rice Valley Wilderness, respectively. Approximately 1.3 miles of route No. 660835, near the eastern boundary of the solar plant site, would also be closed. This route is not considered by the BLM to be as recreationally significant as route No. 661085. There are a number of other alternative routes that provide access to OHV routes from the I-10 corridor so overall access for wilderness and recreation would not be impacted. According to the BLM Rangers from the PSSCFO, OHV use in and around the Project site is minimal with not more than, conservatively, a few hundred visits in a year during the cool months (September through May). In general, sightseeing and day use touring by locals is the predominant use pattern on the affected routes.

Mitigation Measure REC-5 would reduce the public access impact by requiring that the Applicant, in consultation with the BLM, reestablish north/south OHV connectivity to the northeast side of the Palen-McCoy Wilderness Area and the west side of the Big Maria Wilderness Areas. Mitigation Measure REC-6 would reduce the long-term effects on recreational access by requiring the Applicant to identify and provide alternative recreational opportunities and experiences on the lands outside the Project site boundary.

After decommissioning, recreational users would experience a beneficial impact as the site would be restored to its natural undeveloped state and it would be available for recreational use. Public access to OHV routes would also be restored.

All Phases

For all phases of the Project, activity at the site and installation of a new industrial feature could attract OHV users in the surrounding viewshed to the site boundary via designated OHV open routes or over land. This could increase the opportunities for vandalism, illegal cross-country use, and other disruptive behavior. Mitigation Measure REC-3 would reduce this potential effect by requiring notification of penalties for any off-route OHV activities to deter off-route travel.

Recreational Use

On-Site

Construction, Operation, Maintenance and Decommissioning. According to the Recreation Element of the CDCA Plan, "lands managed by the Bureau [BLM] are especially significant to recreationists." Permanent conversion of approximately 3,960 acres of public lands within the solar plant site, including 1,089 acres of lands determined to have wilderness characteristics, to the Project would disrupt dispersed recreational activities. The solar plant site would be inaccessible for recreational use (with the exception of the Unit 1 construction phase, during which only the Unit 1 site would be fenced/inaccessible). Access roads would have gates or signs installed to control public access to the site for safety reasons. Although day users, hikers, and RV campers would no longer be able to utilize the Project site for dispersed recreational opportunities and related experiences and benefits during construction, operation, maintenance, and decommissioning, dispersed recreational use has not been observed within the Project area by BLM Rangers.

As an indirect effect of the Project, campers, hikers, and backpackers could compensate for the loss of these public lands by utilizing other desert lands in the vicinity of the Project for their recreational experiences and benefits. This could result in more concentrated use of those areas, leading to loss of some native vegetation, wildlife habitat fragmentation or loss, elevated soil loss, increases in noise, and possible temporary declines in air quality from more concentrated vehicle use in a smaller available area. However, this impact would be minimal because, as discussed above, high recreational use has not been observed within the Project area by the BLM Rangers.

Off-Site

Special Designations. Effects to recreational users of specially designated lands (including, wilderness, ACECs, and LTVAs) could occur. For a discussion of potential impacts to OHV route access to wilderness areas, see above. For a discussion of the potential impacts to visual quality from wilderness areas and ACECs see Section 4.19, *Visual Resources*.

Six wilderness areas are located in the vicinity of the site: the Palen-McCoy Wilderness, Big Maria Mountains Wilderness, Rice Valley Wilderness, Little Chuckwalla Mountains Wilderness, Palo Verde Mountains Wilderness, and Riverside Mountains Wilderness. The Palen-McCoy Wilderness is the closest to the Project site at approximately 1.8 miles to the east. Recreational users could be affected by construction, operation, maintenance, and decommissioning activities that would generate noise and dust. However, according to the CDPA §103(d), "The Congress does not intend for the designation of wilderness areas in §102 of this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area."

However, as discussed in Section 4.12, *Noise*, the loudest noise associated with the Project would be encountered during Phase 2 of Project construction. Ambient noise levels measured at a residence located approximately 2.7 miles south of the southern Project boundary in June 2009 found average daytime noise levels to be 45 dBA L_{eq} and average nighttime noise levels to be 36 dBA L_{eq}. The maximum noise levels from construction activities that could occur at the solar plant site would be approximately 33 dBA at the closest identified residence located 2.6 miles away. Considering that the nearest special designation where recreational use would occur is approximately 2 miles to the east of the Project boundary, noise would attenuate such that the sound would be barely audible to recreational users. Therefore, impacts to recreational users of wilderness areas would be minimal. However, impacts to recreational users of lands with wilderness characteristics within approximately 2 miles of the northeastern fence line would be affected temporarily during construction activities. As discussed above, campers, hikers, and backpackers could compensate by utilizing other desert lands in the vicinity of the Project for their recreational experiences and benefits.

As discussed in Section 4.2, *Air Resources*, construction, operation, maintenance, and decommissioning activities could generate dust in the form of PM10 and PM2.5. However, the worst-case PM2.5 and PM10 impacts would occur at the fence line and drop off quickly with distance. Therefore, there would be no impacts to recreational users within special designation areas and minor temporary impacts to recreational users of lands with wilderness characteristics within close proximity to the Project fence line.

Long Term Visitor Areas. The Midland LTVA is located about 4.6 miles northeast of the Project site. Visitors camping at this LTVA are seeking opportunities for socialization with similar users in a semi-primitive environment. Due to the distance from the Project site there would be no impact to recreational users from noise and/or dust created by construction, operation, maintenance, and decommissioning activities. It is anticipated that some construction workers could reside in RV campers at the Mule Mountain and Midland LTVAs in California and the La Posa LTVA south of Quartzsite in Arizona, or possibly camp on public lands in the vicinity of the Project site during the construction phase of the Project. Although the BLM offers developed campgrounds within commuting distance of the Project, only the LTVAs allow long-term camping. The Midland and Mule Mountains LTVAs allow camping up to 7 months (September 14 to April 16) with a special use permit. Outside of these dates, the camping limit is 14 days. Depending on the number of authorized workers using the LTVA, use could affect the social setting or the physical infrastructure of the LTVAs. However, the LTVAs are designed with minimal facilities given that campers must use self-contained RVs and there are no assigned or designated sites, except for the Wiley’s Well and Coon Hollow Campgrounds within the Mule Mountain LTVA. Midland LTVA is 135 acres and averages 41 permits per year. Mule Mountain LTVA is 2,805 acres with an average of 135 permits per year. Except for the designated campsites at Wiley’s Well and Coon Hollow, each LTVA can accommodate several hundred RV units with a minimum distance of 15 feet between units, which is well in excess of current use.

Maximum authorized use of LTVAs by construction workers would impact the social and recreation experience of winter users. If use of the LTVAs reduced spacing and relative solitude, seasonal long-term visitors could move to other LTVAs in Arizona or Imperial County, thereby compounding crowding at these already popular sites. If there is significant use of the LTVAs by workers, then the BLM may need to increase law enforcement patrols at the LTVAs, reducing patrols on public lands elsewhere.

Although it is possible that unauthorized use of these LTVAs could occur when they are closed from April 16 to September 14, such use would be subject to law enforcement and, in any event, would be unlikely because this area experiences extremely hot weather during the closed season.

The temporary increase in demand for accommodations during construction that might be caused by an influx of workers and the resulting potential impact on LTVAs and other nearby recreation areas would be reduced by Mitigation Measure REC-4, which encourages workers to utilize local housing opportunities or private RV parks in Blythe and other nearby communities instead of public lands.

Regional and Local Recreation Resources. Because the regional and local recreational facilities described in Section 3.14 consist primarily of long-term camping facilities and supporting recreational uses, impacts to these resources would be similar to impacts to LTVAs described above. Depending on the number of authorized workers using the long-term camping facilities, use could affect the social setting or the physical infrastructure of these sites and/or the availability of short-term recreational uses due to increased demand.

4.14.4 Alternative 2: Reduced Acreage

4.14.4.1 Direct and Indirect Impacts

Alternative 2 would cause the same types of recreation-related impacts as the Proposed Action, and would have the same direct effect on designated OHV routes. However, the solar plant site would be smaller for Alternative 2 than for the Proposed Action, making only 1,782 acres of public lands inaccessible within the solar plant boundary for recreational use beginning with construction and ending after decommissioning is complete. Additionally, during construction and decommissioning, Alternative 2 would have the same indirect effect on existing recreational resources, but during operation and maintenance this effect would be slightly reduced due to its fewer (13) long-term employees.

4.14.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.14.5.1 Central Route

Direct and Indirect Impacts

Because the Central Route would result in temporary closures of the same routes, and the workforces for all phases of this Alternative would be the same as the Proposed Action, the Central Route would have the same direct and indirect impacts on recreation and public access as the Proposed Action.

4.14.5.2 Western Route

Direct and Indirect Impacts

Because the Western Route would result in temporary closures of the same routes, and the workforces for all phases of this Alternative would be the same as the Proposed Action, the Western Route would have the same direct and indirect impacts on recreation and public access as the Proposed Action.

4.14.6 Alternative 4: No Action Alternative

The No Action Alternative would result in no recreation-related or public access impacts because the Project would not be implemented, and therefore, there would be no change to the existing use.

4.14.7 Cumulative Impacts

4.14.7.1 Recreational Use of Local and Regional Facilities

The geographic scope of the cumulative effects analysis for general recreation at local and regional facilities includes the local and regional recreational facilities described in Section 3.14.1.2. The temporal scope includes all phases of the Project, beginning with construction of the Unit 1 fence and ending after decommissioning. As described above, the Project's authorized workers could use the long-term camping facilities and their associated recreational amenities primarily during construction and decommissioning. The other projects in the cumulative scenario, and in particular the other renewable energy projects listed in Tables 4.1-3 and 4.1-4, could result in similar demand for and use of long-term camping and other recreational facilities. In combination, the increased use of these resources due to the presence of authorized workers for the Project and cumulative projects could affect the social setting or the physical infrastructure of these sites. Additionally, increased demand for other types of recreation resources and the displacement of dispersed recreation from the Project site and other projects' development footprints could reduce the availability of short-term recreational uses for other visitors to the area. However, the effects related to displacing dispersed recreation would be minor due to the low observed recreation on the Project site and at other projects' locations (e.g., BLM, 2010a, 2011).

4.14.7.2 Recreational Use of Public Lands

The geographic scope of the cumulative effects analysis for general recreation on public lands includes CDCA Plan area lands designated Class L in eastern Riverside County. This geographic scope was established based on the boundaries of the affected resource. The temporal scope includes all phases of the Project, beginning with construction of the Unit 1 fence and ending after decommissioning. As described in Section 3.10, *Lands and Realty*, there are 550,087 acres of Class L lands in eastern Riverside County. During this period, from start of construction to the completion of decommissioning activities, the existence of the Project would preclude the use of the site for recreation and, thereby, affect the amount of Class L lands within the CDCA Plan area available for recreational use. The Desert Southwest Transmission Line Project; enXco McCoy, BSPP, Palo Verde 2, and Rio Mesa renewable energy projects; and the Eagle Mountain Landfill Project would also be located on Class L lands. The Project would remove approximately 4,019 acres, and Alternative 2 would remove 1,782 acres plus 59 acres (if paired with the Eastern Route) or slightly less (if paired with the Central Route) of Class L lands from availability for recreational use.

The projects listed above and described in Table 4.1-4 would occupy over 40,000 acres of Class L lands in eastern Riverside County, for a total of approximately 44,000 and 42,000 acres including the Project's or Alternative 2's contribution. Of the total Class L lands in eastern Riverside County, the Project represents less than 1 percent with a total cumulative effect of approximately 8 percent. Alternative 2 represents less than 0.5 percent with a total cumulative effect of less than 8 percent. The contributions of the Alternative 3 gen-tie and access road routes would be negligible, with a difference of fewer than 10 acres compared to the proposed gen-tie line and access road route.

Over 500,000 acres of Class L lands in eastern Riverside County would remain available for recreational use, other classes of lands can also support some of the same recreational uses that are allowed on Class L lands, and upon completion of decommissioning these lands would be available for recreational use. Additionally, most of the projects in the cumulative scenario are located in areas with low recreation use, much like the Project site.

4.14.7.3 Lands with Wilderness Characteristics

The geographic scope of the cumulative effects analysis for effects on lands with wilderness characteristics would be an area of approximately 30,200 acres within the McCoy Wash that has been identified as lands with wilderness characteristics (Figure 4.1-1). Effects would occur throughout the life of the Project and beyond. As described in Section 4.16, *Special Designations*, the Project would convert approximately 1,089 acres of lands with wilderness characteristics to use as a solar plant. Implementation of the enXco McCoy Project, just north of the Project, could affect up to 7,150 acres of lands with wilderness characteristics. Therefore, a total of 8,240 acres or approximately 27 percent of the area identified as lands with wilderness characteristics would be unavailable for recreational use. The Project's incremental contribution to this cumulative impact would be approximately 13 percent of the total impact. Implementation of Mitigation Measure LWC-1 described in Section 4.16 could offset impacts specific to the Proposed Action through enhancement of off-site lands, providing a net benefit to a designated wilderness area that provides opportunities for recreational use.

4.14.7.4 Long-Term Visitor Areas

As described above, it is anticipated that some construction workers could reside in RV campers at the Mule Mountain and Midland LTVAs in California and the La Posa LTVA south of Quartzsite in Arizona; these LTVAs make up the geographic scope of this analysis. Each LTVA can accommodate several hundred RV units, and current use is much lower than capacity. Other Projects in the cumulative scenario would also result in an influx of construction workers who may choose to reside in LTVAs during the permitted season. Impacts to LTVAs from maximum authorized use by construction workers would be to the social and recreation experience of winter users, as well as to the potential need for increased law enforcement patrols, reducing the available patrols for other public lands. Implementation of mitigation measures REC-4 and REC-6 would reduce the Project's contribution to these impacts.

4.14.7.5 OHVs

The energy-related development projects identified in Table 4.1-1 would also result in the closure of OHV open routes in the California Desert. The closures would have an adverse effect on the viewscape that would result in some users seeking out, legally or illegally, other areas of the desert for their activities and experiences. Specifically, the closure of portions of major designated open route No. 661085 as a result of the BSPP to the south and enXco McCoy to the north of the Project site, in combination with closure of a segment of the same route on the Project site, would result in a total closure of approximately 6.5 miles. Other routes affected by the combined projects would result in the additional closure of approximately 6 miles of OHV open routes.

The effect of the overall cumulative past, present, and reasonably foreseeable projects in eastern Riverside County, in combination with the closure of OHV routes by the Proposed Action, would adversely affect OHV open routes through closures, rerouting, and use restrictions. However, decommissioning activities would ultimately restore OHV opportunities.

The Project's incremental contribution to temporary, construction-related impacts to OHV routes would be reduced through implementation of Mitigation Measure REC-3, which requires coordination of temporary closure of OHV routes during construction with the BLM. The Project's incremental contribution to cumulative operational impacts on OHV use from closure of route No. 661085 would be reduced through implementation of Mitigation Measure REC-5, which requires reestablishment of the north/south OHV connectivity to areas in the vicinity of the Palen-McCoy and Big Maria Wilderness areas. Additionally, through that project's Mitigation Measure BLM-OHV-2, BLM also required the BSPP applicant to reestablish this connectivity (BLM, 2010b). It is therefore reasonably foreseeable that the enXco McCoy project would be required to implement such a measure as well. These mitigation measures in combination would reestablish connectivity to the areas currently accessible by this route

4.14.8 Mitigation Measures

The following mitigation measures would be imposed by the BLM to avoid or reduce impacts on recreation and public access:

REC-1: The Applicant shall prepare and distribute interpretive materials, including a construction schedule and safety information regarding trucks and other heavy equipment on local roads, to users of the Midland, Mule Mountains, and La Posa LTVAs, Wiley's Well and Coon Hollow Campgrounds, and BLM kiosks announcing the development of the solar facilities at the Project site and the permanent closure of the affected public land to recreational use. The

Applicant shall prepare a one-page fact sheet about the Project and submit it to the PSSCFO for review. The BLM AO shall approve the draft materials prior to distribution.

REC-2: No less than 15 days prior to construction, the Applicant shall coordinate construction activities and the Project construction schedule with the AO for any recreation areas impacted. The Applicant shall schedule construction activities to avoid heavy recreational use periods, or special events in coordination with and at the discretion of the AO. The Applicant shall maintain open route access and avoid temporary preclusion of recreation in accordance with the recommendation of the AO. The Applicant shall document its coordination efforts with the AO prior to construction.

REC-3: No less than 60 days prior to construction, the Applicant shall coordinate with the AO administering any NECO Plan-designated open routes to establish temporary closure of the routes to avoid construction area hazards, if the route is deemed unsafe to use during construction. The Applicant shall post a public notice of the temporary route closure and penalties for any off-route OHV activities. The Applicant shall document its coordination efforts with the AO and submit this documentation to the BLM and other agencies affected at least 30 days prior to construction.

REC-4: The Applicant shall encourage Project workers to utilize local housing or private RV parks in Blythe and/or nearby communities.

REC-5: The BLM may require the Applicant to reestablish north/south OHV connectivity to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen-McCoy Wilderness Area.[1] The Applicant may choose to allow continuous public access along the previously designed open route (Black Rock Road) while providing for separate site security to the solar facilities.

4.14.9 Residual Impacts after Mitigation Incorporated

Following implementation of mitigation measures provided in Section 4.14.8, all adverse impacts on recreation and OHV access resulting from construction, O&M, and decommissioning of the Project and alternatives would be avoided or substantially reduced.

[1] Implementation of a new route would require additional NEPA analysis as well as biological and cultural resources surveys as an agreed upon route has not been surveyed during this PA/EIS process.

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4.15 Social and Economic Effects

4.15.1 Methodology for Analysis

The CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500-1508; reprinted in CEQ, 2005) provides guidelines for addressing social and economic effects in preparing an environmental impact statement. Section 1508.14 of these regulations states that

> "Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. . . . This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

In §1508.8(b), the regulations state that indirect effects of an action "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

Consistent with these regulations, the analysis of socioeconomic impacts will examine impacts of the Project and alternatives with respect to the following issues:

1. Housing availability and the character of local communities that may result from employment of workers for the construction, operation, and decommissioning;

2. Employment and economy of Riverside County from spending and employment; and

3. Revenues of the County government which would provide local public services.

The analysis of potential socioeconomic effects of the Proposed Action and alternatives takes place in the context of physical effects related to population and housing. An input-output model (IMPLAN) was used to estimate the indirect and induced economic impacts from construction operation, maintenance, and decommissioning of the MSEP.

4.15.2 Applicant Proposed Measures

There are no APMs to address potential social and economic effects.

4.15.3 Alternative 1: Proposed Action

4.15.3.1 Direct and Indirect Impacts

Construction

Housing and Community

Construction employment and spending for the Project is the primary mechanism by which the MSEP would cause a socioeconomic impact. Construction would be temporary and is expected to last for 46 months. Given the absence of existing significant economic uses of the site, Project construction would not displace any current economic activity. As discussed in Section 3.15, *Social and Economic Setting*, the location of construction workers is a key factor determining the extent of potential impacts to the local economy and communities. Income from employment primarily would benefit the communities in which the construction workers and their families reside because this is where most household expenditures occur. Also, the distance between workers' residences and the MSEP site would affect the choice of transportation and decision on whether to engage in "weekly commuting" or other forms of temporary relocation while working on the Project.

The number of construction workers on-site would range from 43 to 600 workers, with an average workforce of 341 workers. The estimated construction schedule shows that peak employment may occur in Year 3, Months 6 through 8, estimated to be August to October 2015. For purposes of this environmental analysis, a peak monthly employment of 750 workers is assumed, rather than 600.

Most construction workers are expected to come from western Riverside County, where, along with San Bernardino County, a substantial number of workers in relevant occupations reside (over 109,000 workers; Table 3.15-6). It is possible, however, that some workers will come from the Blythe area or La Paz County, Arizona.

With the exception of eastern Coachella Valley, most of western Riverside County is 2 hours or more travel time away from the Project site (see Figure 3.17-1). Since construction is a temporary assignment, it is not expected that workers from outside the Blythe area would relocate to Blythe permanently in order to work at the Project site. Data reviewed in Section 3.15.1 also indicate that some workers may engage in "weekly commuting," in which they find temporary or transient housing closer to the jobsite during the workweek. It is expected that such workers would seek temporary housing in the Blythe area, where both rental housing as well as a large number of hotel or motel rooms would be available.

According to the 2010 Census, there were 248 housing units for rent in the City of Blythe and an additional 81 units in the surrounding Blythe CCD (Palo Verde Valley and Mesa). There were also 47 units in the community of Ehrenberg and 78 in Quartzsite for a total of 454 rental units (Table 3.15-2). There were also 100 units for sale in the City of Blythe and 22 units in Ehrenberg. As indicated in Section 3.15, in 2008 a total of 296 vacant hotel and motel rooms were available for rent in the local study area. In addition, there are in Blythe and surrounding areas numerous RV facilities, mobile home sites, and campgrounds, which could provide alternative forms of temporary housing. Thus, there would be a sufficient supply of temporary housing options to accommodate workers who may seek temporary housing near the jobsite.

Regional Employment and Economy

With unemployment rates of 13.9 percent in Riverside County and 10.5 percent in La Paz County (averages for January to October 2011), employment of workers for Project construction would have a beneficial effect in helping to reduce unemployment.

Employment and resulting labor income also would have beneficial effects in Riverside County as a whole. These are estimated using a regional input-output model of Riverside County's economy (MIG, 2011). Starting with expenditures or employment for a given project, also called the *direct* impact, an input-output model represents major inter-industry (i.e., business-to-business) transactions in the region of interest, as well as transactions with households, government, and import/export with economies outside the region. Multipliers derived from the model can be used to estimate *indirect* impacts (business-to-business, or supplier, transactions following expenditures by a project) and *induced* impacts (expenditures by households of workers employed by the Project and by the chain of suppliers to the Project). The sum of direct, indirect, and induced impacts represents the total economic or employment impact to the region. For purposes of this analysis, Riverside County is the region of interest, since almost all workers are expected to come from the County.

Construction cost estimates for the MSEP have been developed based on the average construction workforce of 341 workers for the purpose of projecting impacts on regional employment, worker income, and the output of construction companies, excluding costs of materials and supplies that are installed during construction. These estimates are shown in Table 4.15-1.

TABLE 4.15-1
REGIONAL EMPLOYMENT AND INCOME IMPACTS FROM PROJECT CONSTRUCTION

Construction	Employment (Jobs)	Labor Income ($ Million)	Output ($ Million)
Direct Effect	324	$19.3	$45.0
Indirect Effect	57	4.1	11.1
Induced Effect	122	5.1	15.2
Total Effect	503	$28.5	$71.4

NOTE: Sector modeled is 36 Construction of Other New Nonresidential Structures.
Region is Riverside County. Income and output are in 2011 dollars.
Figures may not add to totals as shown due to rounding.

SOURCE: MIG, 2011

Of the average workforce of 341 workers, 95 percent, or 324 workers, would be anticipated to come from Riverside County. Their estimated combined income would be $19.3 million, and total output of the construction phase, excluding materials and supplies, is estimated to be $45.0 million. Including direct, indirect, and induced effects, total employment impact is estimated to be 503 workers in Riverside County; total income, $28.5 million; and total output, $71.4 million. These are annual effects during the 3.8 years of Project construction.

Riverside County Tax Revenues

The economic benefits of increased income and employment would result in indirect and induced revenue, and potential expenditures in the surrounding three counties; however, the precise distribution of labor force among these counties is not known. Because Riverside County would provide most of the local government services to the Project, such as police and fire protection, this analysis focuses on Riverside County.

During construction, the primary revenue source for the County would be the sales and use taxes levied on construction materials and supplies. The current sales tax rate applicable to unincorporated Riverside County is 7.75 percent, of which the County directly receives 1.5 percent, with 0.5 percent for the Riverside County Transportation Commission, 0.25 percent for county transportation funds, and 0.75 percent for county operations (California State Board of Equalization (BOE), 2011b). In addition, 0.5 percent is collected by the state for the Local Public Safety Fund to support local criminal justice activities.

Sales and use taxes are levied on materials and supplies used for construction in the jurisdiction where the jobsite is located (BOE, 2011d). For the Project, the principal materials subject to these taxes would be components of the solar energy generating system, including PV modules or panels, mounting and tracking systems, inverters, and other materials. Based on data collected by National Renewable Energy Laboratory (NREL, 2011), these components are estimated to cost $3.04 per watt (DC). Assuming an average efficiency of 85 percent for conversion to AC power, the effective price is $3.57 per watt (AC).

The NREL cost estimate includes $1.95 per watt (DC) for solar PV modules, the most expensive component of the energy generating system. A recent report (*The Washington Post*, 2011) indicates that some imported PV modules are selling at $1 per watt or less. Assuming that prices of components other than PV modules have not changed much since NREL's report, average material cost may currently (December 2011) be in the neighborhood of $2.09 per watt (DC), or $2.46 per watt (AC), indicating a total material cost of around $1.84 billion for a 750 MW facility. Sales tax revenues allocated to the County (1.5 percent), excluding the Local Public Safety Fund, then would be $27.6 million.

The BOE generally distributes sales and use tax revenues from construction materials and supplies to local governments through a countywide pool, unless a special procedure is used to allocate all such revenues to the jurisdiction of the jobsite. Under the Countywide pool, the unincorporated County would receive a percentage of the revenues, which varies by quarter according to sales and use taxes collected. In the third quarter of 2011, the County received 10.9 percent of the countywide pool (BOE, 2011c). Under such an allocation, the County would receive about $3.0 million in sales tax revenues from construction materials.

Operation and Maintenance

Housing and Community

Permanent operating staff for the Project would number approximately 20 workers. In contrast to construction employment, it is expected that these workers would be either hired locally or, if hired from outside the Blythe area, would relocate to the area. Due to the numbers of vacant homes for sale (100 units in the City of Blythe) or for rent (248 units in the city), there would be minimal impact to the local housing supply or the community, even if all permanent workers were to relocate to the Blythe area.

Regional Employment and Economy

The employment of 20 workers for operation and maintenance would not adversely affect the regional labor market with current (January through October 2011) unemployment rates of 13.9 percent in Riverside County and 10.5 percent in La Paz County, but instead would have a beneficial effect, particularly for Riverside County.

For input-output analysis, it is assumed that the 20-person operating staff would consist of workers in the following industries: 2 workers in electric power generation and transmission; 16 workers in electronic and precision equipment maintenance; and 2 security staff. Table 4.15-2 shows that total employment impact in the County, including direct, indirect, and induced impacts, would be 34 workers, with total income impact of $1.9 million, and output impact of $5.3 million per year.

TABLE 4.15-2
REGIONAL EMPLOYMENT AND INCOME IMPACTS FROM PROJECT OPERATION

Operation	Employment	Labor Income ($ Million)	Output ($ Million)
Direct Effect	20	$1.3	$3.6
Indirect Effect	6	0.2	0.6
Induced Effect	9	0.3	1.0
Total Effect	34	$1.9	$5.3

NOTE: Sectors modeled are 31 Electric Power Generation, Transmission, and Distribution; 416 Electronic and Precision Equipment Repair and Maintenance; and 387 Investigation and Security Services.
Region is Riverside County. Income and output are in 2011 dollars.
Figures may not add to totals as shown due to rounding.

SOURCE: MIG, 2011

Riverside County Tax Revenues

Pursuant to Riverside County Board of Supervisors Policy B-29, the solar plant site would be taxable at $450 per acre per year. The estimated tax revenue to the County would be $2 million per year, though this amount could be reduced through incentives and credits to a minimum of just under $1 million per year.

During Project operation and maintenance, another revenue source for the County would be property tax revenues. However, California Revenue and Taxation Code §73 exempts a newly constructed active solar energy system from property taxation. An "active solar energy system" includes the solar energy generation system, including PV modules, mounting and tracking systems, inverters, and electrical equipment "up to, but not including, the stage of transmission or use of the electricity" (BOE, 2004).

The largest improvement of the Project that would be subject to property taxation is the gen-tie line. Even when constructed on tax-exempt BLM land, private improvements such as the gen-tie line are taxable as possessory interest. The estimated length of this line, including both inside and outside the Project site boundaries, is 14.7 miles. The Applicant has not provided a cost estimate for the gen-tie line. However, an economic study of a similar solar PV energy project in Imperial County (Imperial County, 2011) estimated that construction of a 5-mile gen-tie line over BLM land would cost $12.4 million, or approximately $2.48 million per mile. Based on this example, it is estimated that the taxable value of the proposed gen-tie line, excluding land, would be $36.46 million.

The average rate of property taxation in the County in fiscal year (FY) 2009-10 was 1.089 percent, generating total taxes of approximately $2.3 billion (BOE, 2011a). This was distributed to the County, cities, schools, special districts, and other agencies. According to the Riverside County Assessor-County Clerk-Recorder's (ACR) office, property taxes distributed to local agencies in FY 2010-11 totaled $2.0 billion, of which 6.3 percent went to cities, 11.5 percent to the County, and the remainder to other agencies (Riverside County, 2011).

In unincorporated areas, the County's share of the 1 percent property tax is higher than the average for the County as a whole. For purposes of this analysis, it is assumed that the County would receive 17.8 percent of the 1 percent tax collected from the Project site. Estimated property tax revenue to the County from the gen-tie line thus would be approximately $64,900 per year. Although it is likely that the Project would generate additional property tax revenues from a new switchyard to be constructed near the SCE substation, as well as onsite improvements not directly related to solar energy generation, no cost estimates are available for these improvements.

Decommissioning

After 30 years of operation, the Project would be decommissioned, with all equipment and improvements dismantled and removed from the site, and the site would be restored to an undeveloped condition. Decommissioning would be completed by a workforce of 300 over a 24-month period.

Housing and Community

As in the case of Project construction, the temporary decommissioning workforce would likely come mostly from western Riverside County and a smaller number from the Blythe area and La Paz County. Many workers would likely commute to the Project site. For workers who choose to commute weekly and temporarily relocate to the Blythe area during the workweek, it is expected that sufficient numbers of rental properties and hotel and motel accommodations would be available in the area.

Regional Employment and Economy

It is difficult to forecast employment conditions for 30 years into the future. Even if unemployment rates in Riverside and La Paz counties decline to lower levels, such as those experienced in 2005 to 2007 (see Table 3.15-5), demand for 300 workers for decommissioning of the Project would not have an adverse impact on the regional or local labor market. Expenditures for decommissioning, including payments to workers, would have a beneficial effect on the regional economy. However, the linear input-output model of 2010 cannot be applied to the decommissioning work, since the regional economy undoubtedly will experience substantial changes in the intervening years.

Riverside County Tax Revenues

No substantial sales or property tax revenues would be generated during or after decommissioning.

4.15.4 Alternative 2: Reduced Acreage

4.15.4.1 Direct and Indirect Impacts

Construction

The construction workforce for Alternative 2 is expected to be the same as for the Proposed Action; therefore, there would be a sufficient supply of temporary housing options to accommodate workers who may seek temporary housing near the jobsite. Additionally, estimated impacts on regional employment, worker income, and the output of construction companies are the same as those shown in Table 4.15-1. However, the annual economic effects described would occur only during Alternative 2 construction, which could be up to 24 months shorter than the Proposed Action.

The total material cost of Alternative 2 materials and supplies would be around $613 million for the 250 MW facility. The 1.5 percent sales tax revenues allocated to the County (excluding the Local Public Safety Fund) therefore would be $9.2 million. Based on an allocation to the County of 10.9 percent of the countywide pool, the County would receive about $1.0 million in sales tax revenues from construction materials. This economic benefit would be approximately one third that of the Proposed Action.

Operation and Maintenance

Because of its reduced size, Alternative 2 would be expected to generate just over $1 million per year of operation under Riverside County Board of Supervisors Policy B-29.

Permanent operation and maintenance staff for Alternative 2 would require approximately 13 workers, who would be expected either to be hired locally or to relocate to the area. This would be a reduced number of staff compared to the Proposed Action. Nonetheless, there would be no substantial difference in impact to the local housing supply or the community between Alternative 2 and the Proposed Action.

The analysis of employment and income impacts of Alternative 2 is based on the analysis prepared for the Proposed Action, and it is assumed that the impacts would be proportional to those of the Proposed Action (i.e., 13/20, or 65 percent). Table 4.15-3 shows that the total employment impact in the County, including direct, indirect, and induced impacts, would be 23 workers, with total income impact of $1.2 million, and output impact of $3.5 million per year. This would be a reduced benefit compared to the Proposed Action.

TABLE 4.15-3
REGIONAL EMPLOYMENT AND INCOME IMPACTS FROM PROJECT OPERATION

Operation	Employment	Labor Income ($ Million)	Output ($ Million)
Direct Effect	13	$0.9	$2.3
Indirect Effect	4	0.1	0.4
Induced Effect	6	0.2	0.7
Total Effect	23	$1.2	$3.5

NOTE: numbers were generated by applying a 65% reduction to the numbers in Table 4.15-2; Region is Riverside County. Income and output are in 2011 dollars.
Figures may not add to totals as shown due to rounding.

Decommissioning

The decommissioning workforce is anticipated to be the same as for the Proposed Action; therefore, there would be a sufficient supply of temporary housing options to accommodate workers who may seek temporary housing near the jobsite. Additionally, estimated impacts on regional employment and economics are the same as for the Proposed Action, except that the decommissioning phase, and therefore the period in which benefits would occur, could be shorter.

4.15.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.15.5.1 Central Route

Direct and Indirect Impacts

The Central Route would be shorter than the proposed gen-tie line and access road route. Nonetheless, the construction, operation, maintenance, and decommissioning workforce associated with the Central Route would be the same as that required for the Proposed Action. Consequently, there would be no substantial difference between the Central Route and the Proposed Action with respect to workforce-related effects.

During operation and maintenance, the Central Route would be taxable as possessory interest. Based on the assumptions used for the Proposed Action, it is estimated that the taxable value of the Central Route would be $5.5 million less than that of the Proposed Action. Based on this value, the County would receive approximately $9,700 less per year in property taxes for the Central Route than for Proposed Action.

4.15.5.2 Western Route

Direct and Indirect Impacts

The Western Route would be slightly longer than the proposed gen-tie line and access road route. Nonetheless, the construction, operation, maintenance, and decommissioning workforce associated with the Western Route would be the same as for the Proposed Action. Consequently, there would be no substantial difference between the Western Route and the Proposed Action with respect to workforce-related effects.

During operation and maintenance, it is estimated that the taxable value of the Western Route would be $2 million more than that of the Proposed Action. The County would receive approximately $3,500 more per year in property taxes for the Western Route than for Proposed Action.

4.15.6 Alternative 4: No Action Alternative

The baseline conditions associated with socioeconomics would continue under Alternative 4. Under this Alternative, no jobs, population growth, or economic effects would be created. Therefore, Alternative 4 would have no adverse impact with respect to social and economic effects and would not generate the beneficial impacts that would result from the Proposed Action.

4.15.7 Cumulative Impacts

The potential for cumulative socioeconomic impacts exists where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Projects with overlapping construction schedules and/or operations could collectively result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of non-local workers and possibly their dependents. This population increase could impact social and economic resources if there are insufficient housing resources and/or infrastructure and public services to accommodate the new residents' needs.

Section 4.1.5 identifies current solar and non-solar projects that have been or could be developed in the foreseeable future within eastern Riverside County. While a large number of projects may be planned, and so considered to be possible for future development, not all of them are expected to actually be built due to construction funding constraints, schedule, and/or delays. Given the uncertain and challenging economic circumstances facing federal and state economies as well as private developers, it is far from assured that future funding and other necessary support will be sufficiently available for all of the proposed projects to be realized within the projected schedules.

As shown in Table 4.1-1, currently more than a dozen BLM renewable energy projects are identified in the cumulative project scenario for the social and economic analysis. In addition, seven other projects are also identified that could require workers with similar skills to the Project, including non-BLM renewable energy projects, transmission lines, and electrical substations. The geographic scope of the cumulative impacts analysis includes populated areas within a 2-hour commute distance of any of these projects, which would extend as far west as

Moreno Valley, given the locations of the cumulative projects. Although the 2-hour commute distance would also extend into Arizona, the low population in western Arizona would contribute minimally to the available labor pool in the geographic scope (242 total construction workers in La Paz County). Therefore, the analysis for employment focuses on the California portion of this area. The communities within the geographic scope have a combined population of 533,107, approximately 24 percent of Riverside County as a whole (U.S. Census Bureau, 2012).[1]

There are 17 solar projects proposed or under construction along the I-10 corridor predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, these projects would be constructed in the same general timeframe as the proposed action (i.e. between 2013 and 2016).

The cumulative analysis conservatively assumes that the construction of all of the proposed solar projects would be under construction within the 46-month cumulative timeframe for construction-related impacts of the Project. This cumulative impacts discussion is based on available data with respect to both construction schedules and the projects' labor requirements. If construction and operating labor requirements are not known for some projects, average work force levels of other comparable projects and professional judgments have been used to develop conservative estimates of expected cumulative labor requirements for these projects.

4.15.7.1 Economic

Construction

Cumulative Construction Labor Needs

Table 4.15-4 shows the currently available data about project construction workforces for several of the projects in the cumulative scenario and this Project. These numbers were used to estimate the average and peak construction workforces per MW of solar projects, which were then used as workforce estimates for those projects in the cumulative scenario for which no workforce data is available.

If all of the 14 BLM-administered and three County-administered solar projects identified in eastern Riverside County are constructed (including the Project), a total of 6,590 MW of new solar power would be developed. The average solar power project would be approximately 390 MW in size and may be expected to require an average of approximately 420 full-time equivalent (FTE) construction workers and a peak of 800 workers to be built.[2] Because the precise construction schedules for each project are currently unknown, this analysis assumes that the peak construction periods of the solar projects in the cumulative scenario would be of a similar

1 The geographic scope includes: Blythe CCD, Chuckwalla Valley CCD, Coachella Valley CCD, Desert Hot Springs CCD, Cathedral City-Palm Desert CCD, Palm Springs CCD, and San Gorgonio Pass CCD.

2 This is based on an estimated average construction labor need of approximately 1.08 construction workers (FTE) per MW of solar power production capacity on average and 2.05 workers per MW during peak construction, see Table 4.15-4.

TABLE 4.15-4
AVERAGE AND PEAK CONSTRUCTION EMPLOYMENT FOR CUMULATIVE SCENARIO SOLAR PROJECTS

Project	MW	Average Workers	Peak Workers
McCoy	750	341	750
Palen	500	566	1,145
Genesis	250	646	1,085
BSPP	1,000	604	1,004
Desert Sunlight	250	450	570
Rice	150	280	438
Rio Mesa	750	1,050	2,500
Column Total	3,650	3,937	7,492
Average for all Projects (per MW)		1.08	2.05

SOURCE: BLM, 2005, 2010a, 2010b, 2011a, 2011b; BrightSource, 2011;CEC, 2010; CPUC, 2006, 2011.

length to the Project (3 months). Project developers would likely seek to minimize the construction occurring during the hottest summer months and may therefore stagger their construction periods accordingly. Consequently, some seasonality may be expected to occur as developers favor more construction during the region's cooler winter months. It is assumed that peak construction needs for each of the solar projects would be approximately evenly spread throughout the 46-month period for cumulative construction-related impacts. If all of the projects experienced their peak construction during the 46-month cumulative temporal scope, the regional labor need for a realistic "worst case condition" would be for four projects to have peak labor needs during the same winter season. Therefore, the equivalent of 4.25 average (390 MW) solar projects could experience peak construction at one time. This gives an average cumulative solar workforce of approximately 8,800 workers.[3] Under the extremely improbable circumstance that peak construction of all 17 planned solar projects happens concurrently, they would require a maximum of 13,600 construction workers at one time.

In addition to the solar projects described, additional projects that could require similar types of construction labor would include the DPV2 Transmission Line, Desert Southwest Transmission Line, and CRS Expansion projects. The DPV2 project is estimated to require 211 construction workers for the segment in the geographic scope (CPUC, 2006). The CRS Expansion project is estimated to require up to 40 construction workers (CPUC, 2011). The Desert Southwest Transmission Line project is estimated to require an average of 71 construction workers (BLM, 2005). Adding these workforces to the average solar construction workforce derived above yields a total of approximately 9,100 workers.

3 Final cumulative workforce estimates are rounded to reflect the uncertainty that results from making assumptions about projects for which data is not currently available.

Because not all of the cumulative projects would be under construction for the entire 46-month Project construction period, the actual cumulative construction workforce may be lower. However, it is reasonable to assume that other future projects that are not yet known for this Project's cumulative scenario may begin construction later in this time period. For this reason, a rounded winter-season peak of approximately 9,000 construction workers is used in this analysis.

The Project's maximum potential contribution to this cumulative effect would be approximately 8.3 percent during its own peak construction period. The Project's average contribution to the cumulative impact would be approximately 3.8 percent during its non-peak construction.

Regional Labor Force Supply

As discussed previously, the total work force of skilled construction workers currently living in Riverside County is estimated to be approximately 35,600 (Table 3.15-3). Assuming that these workers are evenly distributed throughout Riverside County, the total construction work force within the geographic scope would be approximately 24 percent of this, or 8,550 workers. Future demand for 9,000 construction workers would exceed the capacity of the current skilled labor force. Although the population of skilled construction workers in the Riverside-San Bernardino-Ontario MSA is expect to increase by approximately 5 percent by 2018 (Table 3.15-6), even if this level of growth occurred in the geographic scope, the cumulative labor force demand would still represent more than the region's currently forecasted future skilled construction labor force.

The current unemployment rate in Riverside County is estimated to be 13.9 percent (see Table 3.15-5). Applying this rate to the skilled construction workers in the geographic scope yields an estimate of approximately 1,190 unemployed construction workers. The cumulative construction worker demand would represent nearly eight times this number. Although many of the region's currently unemployed residents may lack transferable skills or have the physical aptitude to acquire the necessary skills required to serve the cumulative labor demand, many residents could be trained to be employable by these projects. Further, some of the construction work would be more entry-level positions which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors also could have the capabilities to qualify for Project construction work. In such cases, some job transferring may occur, particularly because the construction jobs may be expected to be relatively well-paid and attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents.

Housing and Lodging Impacts within the Local Study Area

Notwithstanding the potential for employed and unemployed non-construction workers to qualify for the construction jobs of the cumulative scenario, there would be a demand for construction workers that would exceed the available labor supply within the geographic scope. It is assumed that those job positions would be filled by workers relocating into the region from elsewhere.

Given the numerous variables discussed above, it is difficult to project the extent of future weekly commuting or other in-migration that would be necessary to meet the future cumulative labor needs within the region. However, as a conservative assumption, it is assumed that up to 7,500 construction workers could require temporary housing in the local or regional area.

The skilled construction labor force within the areas of Riverside County outside of the geographic scope is estimated to be approximately 27,050. This suggests that there is likely to be a considerable additional potential labor force available willing to commute weekly or to relocate temporarily to the area. Consequently, from a broader geographic and labor force perspective, no significant shortages of adequately skilled construction workers is foreseen, provide that adequate suitable housing is available for relocating near the work sites.

The cumulative influx in construction labor to the area could create demand for temporary housing that is greater than the existing supply of temporary lodging. As discussed in the previous construction impact analysis, private and public RV/campgrounds are not expected to be suitable or attractive lodging options for most construction workers seeking local accommodations. There are expected to be approximately 450 vacant rental units and 296 vacant hotel and motel rooms available in the local area. Assuming that about half of the construction workers might be willing to share accommodations to save on their lodging costs, the existing local rental units, hotels, and motels could be able to house up to 1,125 construction workers seeking local temporary housing. If these workers were willing to commute up to 2 hours to the site daily, the supply of vacant rental units and hotel and motel rooms increases to an estimated 5,084 rooms, which would house up to 7,600 construction workers. This would be sufficient to temporarily house the approximately 7,500 construction workers that could move into the area as a result of the cumulative projects; however, any unforeseen increase in worker demand or decrease in availability of lodging could exceed the capacity of the communities within the geographic scope to adequately house these workers.

Irrespective of the availability of temporary housing, it may be expected that, even under future cumulative conditions, a relatively small proportion of construction workers would choose to relocate permanently to the local communities where they would be employed during construction. This is because many construction workers could choose to commute relatively long distances to their work sites and may expect to seek work within the more populated areas of Riverside and San Bernardino Counties in the future.

Furthermore, during the same time period with the greatest potential for adverse impacts resulting from the cumulative demand for construction worker housing, there also would be a major positive economic stimulus to the Blythe area and eastern Riverside County economies associated with the solar development. This economic infusion could result in the construction or availability of additional rental units and so could offset a portion of the housing need-related impact.

In summary, there is potential for short-term adverse cumulative social and economic impacts in the Blythe area associated with the demand for skilled construction labor for the cumulative projects proposed for future development within eastern Riverside County. Analysis suggests that future construction labor demand would exceed the existing local work force within eastern Riverside County. Therefore, there may be increased demand for temporary local housing from construction workers seeking to commute weekly to the local area. Given the estimated availability of lodging and possible rental housing, it is expected that there could be a shortage of adequate and suitable housing to meet all future construction worker temporary housing demand. Therefore, some adverse social or economic impacts could result if the demand for housing increased the price for local residents seeking housing, and/or if hotel and motel vacancy rates fell such that rooms were not available for potential visitors to the area who would otherwise generate economic stimulus from vacation-related spending. However, much of this lost economic income would be offset by the income that would result from these projects.

Operations

If all of the cumulative projects are constructed, a total of 6,590 MW of new solar power would be developed. As shown in Table 4.15-5, the average solar project is estimated to require approximately 0.18 operational employees for each MW of solar power production. Consequently, if full build-out of the planned solar development occurs, the future cumulative operational employment in the region would be approximately 1,180. The Project's 20 operational jobs represents an approximately 1.7 percent contribution to the cumulative operation- and maintenance-related need. Because the other cumulative project for social and economic effects include an expanded electrical substation and transmission lines, it is not anticipated that these would add noticeably to the cumulative operational employment demand.

TABLE 4.15-5
OPERATIONAL EMPLOYMENT FOR CUMULATIVE SCENARIO SOLAR PROJECTS

Project	MW	Employees
McCoy	750	20
Palen	500	134
Genesis	250	65
BSPP	1,000	221
Desert Sunlight	250	15
Rice	150	47
Rio Mesa	750	150
Column Total	3,650	652
Average for all Projects (per MW)		0.18

SOURCES: BLM, 2005, 2010a, 2010b, 2011a, 2011b; BrightSource, 2011; CEC, 2010; CPUC, 2006, 2011.

As shown in Table 3.15-3, there are 19,500 workers in the "Transportation, Warehousing & Utilities" industry group in Riverside County, for a total of approximately 4,860 workers within the geographic scope. Although not all workers in this category may possess the skills required for solar power plant operation and maintenance, the transferability of other skills, on-the-job and local community college training opportunities, and the lower skilled qualification requirements for some of the jobs suggest that there would be many others outside this category who would be able to meet the cumulative operational labor needs. Therefore, in the absence of more precise data on available skills, this industry group is used as the available labor pool for this analysis.

Based on current unemployment rates, it is assumed that approximately 675 of these workers would be available to meet operational labor needs (this number is rounded to 700 to account for the low level of precision inherent in the preceding assumptions).

Therefore, there could be an in-migration of up to 480 operational workers to meet the cumulative labor need. As described in Section 3.15, there are 682 vacant housing units for sale or rent in the Blythe, Ehrenberg, and Quartzsite areas, which would be sufficient to accommodate the housing needs of these workers and their families. Additionally, as shown in Table 4.1-4, there are a number of residential developments proposed in Blythe that could be expected to be built by the start of the solar power plants' operation. Furthermore, the relatively limited number of new residents would not be expected to result in any noticeable change to the local communities' social composition or character. The future operations of the solar projects would also generate significant annual economic benefits in local employment, direct and indirect spending at local businesses, and positive sales and other tax benefits for the local area. Consequently, the cumulative social and economic effect of the future operations of the solar projects would be minor and primarily beneficial, although the increased demand for housing and subsequent decrease in supply could increase housing prices in the local area, a potentially adverse effect for current residents or others seeking to move into the area.

Decommissioning

Evaluating the Project's cumulative impacts when future facility decommissioning occurs is highly speculative. Decommissioning is expected to occur after 30 years of operation. It is not possible to project with confidence the likely future social and economic conditions of the local and regional study area. Similarly, the extent to which the projects in the cumulative scenario would undergo decommissioning concurrently is unknown.

Nonetheless, Project decommissioning is expected to require a workforce similar to the construction phase, and the Project is expected to be one of many similar solar projects within eastern Riverside County. As such, its contribution to cumulative social and economic effects would be proportional to: (a) its size relative to the other development projects in the region; and (b) the collective size of projects undergoing decommissioning or construction at that time. Although the cumulative effects of construction were found to be potentially adverse based on a shortage of temporary housing, decommissioning would not likely overlap with as many projects as construction, and in over 30 years' time, based on regional population growth trends, it is likely that there would be more local workers and more temporary housing options available to accommodate decommissioning needs.

4.15.7.2 Social

Construction

The cumulative impact of the many proposed future solar and non-solar development projects in eastern Riverside County would result in considerable short-term construction activity at many locations throughout the region. As described previously, future cumulative demand for construction workers for these projects could exceed the available supply of skilled construction workers living in the region. In this case, construction workers from elsewhere could be attracted to the area by the construction employment opportunities.

The ongoing construction activity in the region, influx of construction workers both commuting daily to the site and those who could choose to temporarily live in the local area could noticeably alter the social character and environment within Blythe and the other local communities. An in-migration of 7,500 construction workers would be equivalent to nearly 28 percent of the total population of the Blythe, Ehrenberg, and Quartzsite communities and, consequently, would likely be very noticeable.

The potential influx of construction workers to the local area would be accompanied by an increase in economic activity from their spending in local business establishments. In addition, the planned new development projects would also make purchases from local businesses for construction materials and supplies and various kinds of services.

The effects of the increased activity on local attitudes and quality of life may vary among residents. While some residents may be displeased by increased traffic, new visitors and temporary residents (particularly those employed or otherwise benefiting economically from the construction) could welcome the development.

However, an influx of new workers also could increase the demand for certain kinds of government services and infrastructure (e.g., police and fire services and medical facilities and services). There have been other past instances of rapid growth in rural areas as a result of energy-related development, most notably the energy boom in the 1970s in states such as Wyoming. A number of communities, such as Rock Springs and Gillette, Wyoming, became known as “boomtowns,” and the local economic benefits from the new energy development in the region were accompanied by some social changes that were not seen as positive by many existing residents. These included changes such as growth in number of bars, higher crime rates, and perceived (by some) aesthetic degradation due to rapid growth occurring to accommodate the sudden increase in population.

The presence of existing larger communities (such as Indio and Coachella) that are within possible commuting range for construction workers could suggest that circumstances may differ substantially from those facing the more isolated Wyoming boomtown communities in the past. However, there would remain a potential for temporary social impacts in the Blythe, Ehrenberg, and Quartzsite areas.

Operation and Maintenance

As discussed in the corresponding economic cumulative analysis, Project operation and maintenance would be expected to have a minor and beneficial effect on the local and eastern Riverside County economy. In the cumulative scenario, there would be an in-migration population of only 420 solar plant operation and maintenance workers. There is likely to be more than sufficient available local housing to accommodate the housing needs of these workers and their families. Furthermore, the relatively limited number of new residents would not be expected to result in any noticeable change to the local communities’ social composition or character. The existence and operation of the solar projects themselves could result in changes to the character and culture of the area by converting open space, one of the primary land uses in eastern Riverside County, to solar plants. The PVVAP (Riverside County, 2008) notes that "The character of the area is reflected by the prominence of the Open Space-Rural and Agriculture land use designations here." A reduction in the amount of open space in eastern Riverside County due to solar plant development could result in cultural changes to the area, such as reduced use of desert recreational opportunities and an altered sense of the character of the area relative to that described in the PVVAP. The future operations of the solar projects also would generate significant annual economic benefits in local employment, direct and indirect spending at local businesses, and positive sales and other tax benefits for the local area. The cumulative social and economic effect of the future operations of the solar projects would be minor and beneficial.

Decommissioning

As discussed in the corresponding economic cumulative analysis, there is insufficient information to reliably project the conditions when decommissioning of the proposed facilities would occur in 35 or more years into the future. Consequently, it would be speculative to try to characterize the future situation and circumstances under which facility decommissioning would occur. Similar to the economic cumulative analysis, it is anticipated that the effects from decommissioning could be of the same type and nature as those from construction, but would not likely be of the same magnitude.

4.15.7.3 Alternatives

Alternative 2: Reduced Acreage

The construction spending and time frame for Alternative 2 would be reduced compared to that of the Proposed Action; however, the construction and decommissioning workforces are anticipated to be the same. Consequently, this alternative's contribution to a cumulative impact during construction and decommissioning would be the same as for the Proposed Action, but would occur over a shorter time period. The operational workforce would be 13 employees, which is fewer than the Proposed Action. Therefore, this alternative's contribution to a cumulative impact during operation would be reduced compared to the Proposed Action. Nonetheless, there would be no substantial difference between Alternative 2 and the Proposed Action.

Alternative 3: Reconfigured Gen-tie/Access Road Routes

Central Route

The Central Route would have a slightly smaller contribution to cumulative economic benefits from taxes due to its shorter length. The construction, operation, maintenance, and decommissioning workforces and time frames would be the same as for the Proposed Action.

Western Route

The Western Route would have a slightly larger contribution to cumulative economic benefits from taxes due to its longer length. The construction, operation and maintenance, and decommissioning workforces and time frames would be the same as for the Proposed Action.

Alternative 4: No Action Alternative

Because no solar power plant would be constructed at the Project site, no impact would occur.

4.15.8 Mitigation Measures

None recommended.

4.15.9 Residual Impacts after Mitigation Incorporated

Not applicable.

4.16 Special Designations and Lands with Wilderness Characteristics

4.16.1 Methodology for Analysis

This analysis of potential effects of the Project and Alternatives related to Special Designations focuses on whether construction, operation, maintenance, and decommissioning of the Project would conflict with the status or management goals of the specially designated areas in the vicinity of the Project. These designations include six National Wilderness Areas, four ACECs, and a National Back Country Byway. In addition to the formally designated areas, lands with wilderness characteristics are adjacent to and within the boundaries of the Project site.

The analysis reviews the Project in relationship to the specific legislation and guidance which are required in the designation and management of Special Designations. These are: FLPMA, CDCA, NECO, the Wilderness Act of 1964, and the National Back Country Byways Program. Additional discussion related to impacts within special designation areas is found in Sections 4.3, *Biological Resources – Vegetation*; 4.4, *Biological Resources – Wildlife*; 4.10, *Lands and Realty*, and 4.14, *Recreation and Public Access (Off-Highway Vehicles).*

4.16.2 Applicant Proposed Measures

There are no APMs to address potential effects to special designations.

4.16.3 Alternative 1: Proposed Action

4.16.3.1 Direct and Indirect Impacts

The Proposed Action would have no effect on existing special designations, specifically the six National Wilderness Areas, four ACECs, and a National Back Country Byway, since the Project site is not subject to any such special designation. Indirect effects could include the generation of noise and dust during all phases of the Project. However, as discussed in Section 4.12, *Noise*, the loudest noise associated with the Project (during the construction phase) would attenuate such that the sound would be barely audible to users of the nearest wilderness area, Palen-McCoy Wilderness. Additionally, as discussed in Section 4.2, *Air Resources*, all phases of the Project could generate dust in the form of PM10 and PM2.5, but these emissions would occur within the Project fence line and drop off quickly with distance, with no effect on special designations.

The Proposed Action would have a direct impact on the 1,089 acres within Unit 2 of the Project which have been identified as lands with wilderness characteristics. The identification of these lands did not specify which characteristics were present on these 1,089 acres. Construction, operation, maintenance, and decommissioning of the Project would prevent this acreage from future consideration as wilderness by Congress. This is primarily because the 1,089 acres occupied by the Project no longer would meet the criteria of being in a “natural condition.” Implementation of Mitigation Measure LWC-1 requires the Applicant prepare and implement, if approved, a proposal to mitigate for the loss of these lands with wilderness characteristics through enhancements in the Big Maria Mountains and Palen-McCoy Wilderness Areas, which are the closest designated wilderness areas to the Project.

The Project also could result in indirect impacts such as noise and air quality impacts to lands with wilderness characteristics outside of the Project fence line. There are 5,812 acres of lands with wilderness characteristics within approximately 2 miles of the Project fence line, and recreational users of these lands could experience construction-related noise above ambient noise levels, as well as minor air quality impacts within close proximity to the Project. The effects of Project-related noise and dust on these users are described in Section 4.14, *Recreation and Public Access (Off-Highway Vehicles)*. Impacts would be minor and temporary.

The Project would not result in direct or indirect effects on the natural condition of lands with wilderness characteristics outside of the Project area. As discussed in Sections 4.3, *Biological Resources – Vegetation*, and 4.4, *Biological Resources – Wildlife*, indirect effects to vegetation and wildlife could occur as a result of the spread of invasive species outside of the Project Area due to the presence of construction and maintenance vehicles, as a result of altered hydrology, and/or as a result of the loss of wildlife habitat connectivity. The Project does not propose to construct or use off-site roads within the lands with wilderness characteristics outside of the Project fence line, and would not result in the potential for the introduction of invasive species within these lands. Additionally, the Project would be located downstream of these lands with wilderness characteristics, so no Project-related changes in off-site hydrology could occur within these lands. Although the Project would create a movement barrier for large wildlife due to the exclusion fencing, within off-site lands with wilderness characteristics, the Project would have no effect on wildlife habitat connectivity. The Project would not indirectly affect the natural condition of these lands with wilderness characteristics.

4.16.4 Alternative 2: Reduced Acreage

4.16.4.1 Direct and Indirect Impacts

The Reduced Acreage Alternative would have no effects on existing special designations including lands with wilderness characteristics. Unit 1 is not subject to any such special designation, and no new designations or amendments to existing designations are proposed that would incorporate Unit 1. Therefore, the Reduced Acreage Alternative would have a reduced effect compared to the Proposed Action.

4.16.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.16.5.1 Central Route

Direct and Indirect Impacts

The Central Route would have no effect on existing special designations including lands with wilderness characteristics. The Central Route is not subject to any such special designation, and no new designations or amendments to existing designations are proposed that would incorporate the Central Route. Because the proposed Eastern Route is included in Unit 1 of the Proposed Action and because no lands in Unit 1 have been identified as having wilderness characteristics, the Central Route would have the same effect (no impact) as the gen-tie line and access road route proposed as part of the Project.

4.16.5.2 Western Route

Direct and Indirect Impacts

The Western Route would have no effect on existing special designations, including lands with wilderness characteristics. The Western Route is not subject to any such special designation, and no new designations or amendments to existing designations are proposed that would incorporate the Western Route. Because the proposed Eastern Route is included in Unit 1 of the Proposed Action and because no lands in Unit 1 have been identified as having wilderness characteristics, the Western Route would have the same effect (no impact) as the gen-tie line and access road route proposed as part of the Project.

4.16.6 Alternative 4: No Action Alternative

The No Action Alternative would have no effect on special designations because no action or project would be implemented. The lands identified as having wilderness characteristics would not be affected and could be managed to protect those characteristics in the future.

4.16.7 Cumulative Impacts

The Proposed Action, Reduced Acreage Alternative, and Reconfigured Gen-tie/Access Road Routes would have no impacts on special designations such as National Wilderness Areas, ACECs, and a National Back Country Byway; therefore, they would not cause or contribute to any cumulative impact in this regard.

However, the Proposed Action would affect lands with wilderness characteristics. Therefore, the geographic scope of the cumulative effects analysis for this effect would be an area of approximately 30,200 acres within the McCoy Wash that has been identified as lands with wilderness characteristics (Figure 4.1-1). Effects would occur throughout the life of the Project and beyond. The Proposed Action, specifically implementation of Unit 2, would affect approximately 1,089 acres of lands with wilderness characteristics. Implementation of the enXco

McCoy Project, just north of the Project, could affect up to 7,150 of lands with wilderness characteristics. Therefore, a total of 8,240 acres or approximately 27 percent of the area identified as lands with wilderness characteristics could be affected by being prevented from future consideration as wilderness. Implementation of Mitigation Measure LWC-1 could offset impacts specific to the Proposed Action through enhancement of off-site lands. The enXco McCoy Project would likely be required to implement similar measures. Implementation of off-site measures would not avoid the cumulative effect to up to 8,240 acres of lands with wilderness characteristics within the McCoy Wash, but would be a net benefit to nearby designated wilderness areas.

4.16.8 Mitigation Measures

LWC-1: Wilderness Characteristics Mitigation Plan. Prior to issuance of a Notice to Proceed in those areas of in Unit 2 of the MSEP having wilderness characteristics, the Applicant shall prepare a proposal to mitigate for the loss of approximately 1,089 acres of lands with wilderness characteristics that would result from the construction of Unit 2. On-site mitigation is infeasible. Therefore, the mitigation plan shall be focused in the Big Maria Mountains and Palen-McCoy Wilderness Areas, which are the closest designated wilderness areas to the project. Mitigation may be implemented in either of these areas or a combination of them and may include:

1. Removal and restoration of approximately 15 miles of unauthorized vehicle routes;
2. Conversion of approximately 3 miles of vehicle route into a hiking trail;
3. Installation of vehicle barriers and signing along publicly accessible portions of the wilderness boundaries; and/or
4. Development of a visitor education and information program aimed at reducing illegal vehicle access into the areas.[1]

4.16.9 Residual Impacts after Mitigation Incorporated

The implementation of Mitigation Measure LWC-1 not avoid impacts related to lands with wilderness characteristics on the Project site, but would offset impacts to wilderness areas near the Project by restoring and/or enhancing routes, trails, and other resources within designated wilderness areas in proximity to the project site.

[1] Implementation of restoration measures may require additional NEPA analysis as well as biological and cultural resources surveys as locations for such work has not been agreed upon or surveyed during this PA/EIS process.

4.17 Transportation and Traffic

This section describes conditions related to transportation and traffic during Project construction and post-construction periods. Discussed are the potential impacts associated with construction, operation, maintenance, and decommissioning of the Project; and mitigation measures to reduce or avoid adverse transportation and traffic effects.

4.17.1 Methodology for Analysis

This analysis focuses on potential impacts related to the construction, operation, maintenance, and decommissioning of the Project on the surrounding transportation systems and roadways using information in the Transportation Impact Analysis prepared for the Applicant (Tetra Tech EC, Inc., 2011) that has been independently reviewed on behalf of the BLM by its environmental consultant. Impacts to local transportation systems were evaluated based on LOS determinations, which is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection based on specific characteristics of traffic flow on designated sections of roadway during a typical day. For mainline freeway and roadway segments, these characteristics include overall traffic volume, speed, and density.

In addition, the analysis used methodology contained in the 2000 *Highway Capacity Manual* (Transportation Research Board, 2000) to determine potential impacts to roadways from operation of the Proposed Action. Several physical and operational characteristics of the roadway, such as lane configuration and flow speed (typical speed along a roadway segment) are used to determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity (v/c) ratio is calculated. The v/c ratio then is assigned a corresponding letter grade to represent the overall condition of the roadway or level of service. These grades range from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) to LOS F (worst operating conditions characterized by forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions).

The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the pre-Project conditions to conditions with Project implementation.

4.17.2 Applicant Proposed Measures

The Applicant has proposed the following APM to minimize impacts on Transportation and Traffic from the Project. The impact analysis assumes that the applicable APM would be implemented as part of the Project to address the impacts discussed below:

> **TRANS-1:** To minimize the potential for any peak a.m. or p.m. work day delays associated with the Mesa Drive, Black Rock Road, and Hobson Way intersections: The Applicant would reduce the number of vehicles on these approaches by splitting construction crews with staggered start times to reduce peak arrivals by about half; encouraging carpooling by

workers; and scheduling Project deliveries and truck trips for off-peak hours in order to avoid interference with the peak on-site worker a.m. and p.m. commute.

4.17.3 Alternative 1: Proposed Action

4.17.3.1 Direct and Indirect Impacts

Construction

Project construction is anticipated to occur over 46 consecutive months, beginning with pre-construction activities in March 2013. Construction of the Project would occur over sequential stages, as construction of Unit 1 and the linear facilities would occur first, requiring about 24 months, followed by construction of Unit 2, which is expected to take approximately 22 months. The estimated completion date for the Project is December 2016. Construction generally would occur between 7:00 a.m. and 7:00 p.m., Monday through Friday; however, additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During the startup phase of the Project (Months 22 through 25, and 44 through 46), equipment and system testing and similar activities could continue 24 hours per day, 7 days per week.

An approximately 15-acre temporary lay down area would be located within the boundaries of Unit 1 solar plant site to support office trailers, parking for the construction workers, and space for vehicle turn-around and maneuvering. The Unit 2 solar plant site temporary lay down area would be approximately 13 acres and support the same types of activities as Unit 1. Lay down areas would provide adequate parking areas to accommodate all construction-related vehicles requiring parking on site.

Construction activities primarily would occur on-site, within the boundaries of the Project; however, construction and installation of the proposed gen-tie line would require construction vehicles to access the tower sites along adjacent roadways. No construction activity would occur within the public right-of-way. Furthermore, in order to access work sites that would not be accessible via existing roads, up to 125 new spur roads would be constructed. Construction of new access roads would require clearing, grubbing, and light grading, prior to the installation of rock road base and asphalt paving. Construction of access roadways would take a period of up to 18 alternating months and a peak of 24 on-site personnel.

Construction Traffic

Worker Vehicle Trips. Table 2-9 in Section 2.4.10, *Construction Schedule, Equipment, and Workforce*, presents the construction activities scheduled per month, per year; and provides the number of estimated workers associated with each construction activity. The total number of construction workforce is expected to range between 43 and 600 workers, with the peak workforce (approximately 600 workers) on-site during August through October of 2015. The average on-site construction workforce would consist of approximately 341 construction, supervisory, support, and construction management personnel. To ensure that vehicle trip generation is not underestimated for the analysis of potential impacts, it is assumed that all workers would travel to and from the Project site in their own vehicles on a daily basis. Therefore, it is expected that up to 600 workers would commute inbound to the Project site during the morning peak period, and those workers would commute outbound during the evening peak period.

Haul Truck Trips. Approximately 10 to 20 deliveries would occur per day (each 50 miles round-trip) during construction, with an expected peak of approximately 25 to 30 deliveries per day during the months of July 2015 through November 2016 for delivery of the modules, trackers, and cabling. All truck deliveries would be scheduled outside normal peak commute periods and would not interfere with the peak on-site worker commute time frame.

Vehicle Trip Distribution. The majority of the construction workforce for the Project would be drawn from the surrounding local and regional areas, including the Blythe and Indio areas (e.g., Coachella, Thermal, and Mecca), areas south of the Project site, and the Arizona areas of Quartzite and Ehrenberg. This analysis considers the possibility that workers could come from as far away as Brawley and El Centro in California or Cibola and Phoenix in Arizona even though travel to and from the site would require more than two hours in each direction. A small number of workers also are expected to travel from the greater Los Angeles Basin. Due to the length of the daily commute to the Project site from the out-lying areas, it is expected that the construction workers would be temporarily housed in either the Blythe or Indio areas, both of which have access to I-10. Based on the origin-location of construction workers commuting to and from the Project site, approximately 60 percent of construction workforce traffic (360 of the peak daily workforce) would originate east of the Project site (Blythe and Arizona towns), and would travel west on I-10 to access the Project site, and approximately 40 percent of workforce traffic (240 of the peak daily workforce) would originate west of the Project site (Indio, Palm Springs, etc.), and would travel east on I-10 to access the Project site. A small number of workers from Blythe are expected to use Hobson Way and travel west directly to Black Rock Road.

Construction Impacts

As stated above, a maximum of 600 daily round trips (1,200 one-way trips) would be generated by worker commuting during Project construction. Although the construction work hours would be 7:00 a.m. to 7:00 p.m., meaning construction workers would commute to and from the Project site outside of the typical peak commute periods (7:00 to 9:00 a.m., and 4:00 to 6:00 p.m.); the analysis conservatively assumes all construction workers would commute during the aforementioned peak traffic periods. It is expected that Project-generated truck trips, delivering materials and equipment, would be scheduled to occur during off-peak traffic hours, and the maximum number of truck trips would by 30 round trips (60 one-way trips) per day. Haul trucks would use dedicated truck routes within each jurisdiction, and would comply with all Caltrans permitting requirements when any truck loads are oversize. As described in Section 3.17.3, *Applicable Regulations Plans, and Standards*, Caltrans has the discretionary authority to issue special permits for the movement of vehicles and/or loads exceeding statutory limitations on the size, weight, and loading of vehicles contained in the California Vehicle Code. The California Highway Patrol is notified about transportation of oversize and/or overweight loads.

Assessment of the short-term effect that Project construction traffic could have on local and regional roads includes review of existing traffic volumes and consideration of both the increase that Project-generated construction traffic would contribute to existing traffic levels of service and the capacity of the road to handle the additional traffic. Although construction-related traffic would fluctuate throughout the entire construction period, due to scheduling of tasks and shifting workforce per Project component, the analysis focuses on the maximum Project-generated increase in traffic on the surrounding transportation network. Traffic conditions were examined under Year 2015 conditions in order to evaluate the extent to which the peak number of workforce traffic (expected to occur during months August through October of 2015) would affect the surrounding transportation network. In order to determine Year 2015 traffic conditions along I-10, projected traffic conditions were derived based on traffic volumes collected by Caltrans between 2004 and 2008 on I-10. An average annual growth rate of 1.3 percent per year was applied to the existing 2010 p.m. peak-hour traffic volumes; a.m. peak-hour traffic volumes were not increased.[1]

As shown in Table 4.17-1, the increase in traffic associated with the construction activities at the Project site would not change the Year 2015 LOS during the peak traffic periods along I-10, and these freeway segments would continue to operate at an acceptable LOS.

TABLE 4.17-1
YEAR 2015 AND YEAR 2015 PLUS PROJECT PEAK-HOUR TRAFFIC VOLUMES AND LEVEL OF SERVICE

Roadway/Segment	Travel Lanes	Capacity[a]	Year 2015 Conditions[b]		Year 2015 plus Project Conditions[c]	
			Volume	LOS	Volume	LOS
I-10 West of Mesa Drive	4	8,000	2,880	A	3,120	A
I-10 East of Mesa Drive	4	8,000	2,600	A	2,960	A

NOTES:
[a] Approximate two-way capacity in vehicles per hour (2,000 vehicles per hour per travel lane).
[b] Year 2015 traffic volumes without the added construction-related Project-related traffic.
[c] Year 2015 traffic volumes with the added construction-related Project-related traffic.

SOURCES: Caltrans, 2011; ESA, 2011.

Although construction traffic would be more noticeable on local roads (e.g., Mesa Drive and Black Rock Road), the increased traffic volumes would remain at levels less than the carrying capacity of those two-lane roads (which is about 10,000 to 15,000 vehicles per day). Because increases in traffic associated with the Project construction activities would not be substantial relative to Year 2015 conditions, the Project would not affect traffic conditions over the course of a workday.

Furthermore, as discussed above, I-10 has sufficient capacity to accommodate Project construction-related traffic while maintaining acceptable LOS during the peak-hour periods.

[1] Caltrans traffic counts indicate fluctuations in a.m. peak-hour traffic volumes on I-10 in the Project area, but that volumes in 2004 were approximately the same in 2008 (the last year that a traffic count was conducted, accordingly to Caltrans' web site at the time this analysis was prepared).

However, during these peak periods, the arrival of approximately 600 construction workers during a single hour could cause delays for workers at the stop-sign-controlled I-10 ramp / Mesa Drive intersection that could cause vehicles to queue back down the off-ramps onto the right lane of I-10. Because I-10 is a relatively low-volume interstate that operates at acceptable service levels (LOS A) and has two lanes in each direction, there would be adequate capacity in the I-10 left lane to allow vehicles to safely pass by any such potential back-up. In addition, the Applicant would require the staggering of worker arrival/departure times to reduce any conflicts with peak commute traffic; therefore, construction activities associated with the Project would not result in any potential adverse queuing effects on the I-10 off-ramps.

Construction of most of the planned facilities would not require closure of any travel lanes and therefore would not reduce the roadway capacity on roads that provide access to the work sites; however, installation of the gen-tie line, conductor stringing, installation of new poles, and construction of spur roads would require construction adjacent to existing roadways and possibly within existing roads on BLM-administered lands in the Project area. Although activities associated with construction of the gen-tie line would occur over a short period in each location as construction progresses along the alignment, roadways along or adjacent to the planned alignment may require temporary closures of travel lanes and reduce roadway capacities during installation. As a result, temporary lane closures due to the aforementioned activities would adversely affect traffic conditions along surrounding roadways.

With respect to construction effects on existing bus transit services, the short-term traffic increases that would primarily occur on I-10 and Mesa Drive (and possibly Hobson Way) during construction would not substantially disrupt transit service provided by PVVTA. There are no bicycle or pedestrian facilities that would be affected by Project construction activities, and the temporary increase in traffic would not reduce, disrupt, or eliminate access to existing bicycle and pedestrian facilities.

Operation and Maintenance

The Project would generate minimal traffic during the operation and maintenance period. Operation and maintenance activities would require approximately 20 permanent, full-time personnel who would be on-site during daytime work hours, Monday through Friday. It is expected that some personnel may be required to be present on-site 7 days a week in order to provide additional monitoring and support on an as-needed basis. During seasonal periods when panel washing would be required, temporary personnel would also be employed. Panel washing for each of the two operating units would occur up to two times per year; a total of up to four panel washing events per year. It is anticipated that each unit washing would require approximately 35 days to complete, or approximately 140 days per year in order to complete panel washing of the entire Project facility.

Operational personnel are anticipated to originate from the Blythe area (located east of the site) or areas closer to the Project (such as Mesa Verde and Nicholls Warm Springs) due to proximity, travel length, and travel time for a typical permanent employee traveling to and from the site. Furthermore, the analysis did not consider full-time workers to be commuting from areas farther than Blythe (e.g., Indio areas), as travel times would be 1 to 1.5 hours, on average. Therefore, all 20 operational and maintenance employees are expected to commute daily from east of the site.

Truck traffic during O&M activities would include delivery of materials and supplies as well as off-site shipments of wastes for disposal. Project operation and maintenance is expected to generate sanitary wastewater, non-hazardous wastes, and small quantities of hazardous wastes to be recycled off-site. Truck travel, as well as other non-employee site visits, would be minimal, as an estimated four trucks (eight one-way trips) would travel to and from the site per day. Furthermore, truck trips to and from the Project site during operational and maintenance activities are anticipated to occur during non-peak commute periods.

Operation and Maintenance Impacts

During operation and maintenance, the Project would require full-time employees to perform equipment inspection, testing, and repairs as well as other daily maintenance activities as necessary. Other maintenance activities would include sporadic, intermittent visits from other personnel and non-employees, including panel washing and on-site inspection during all energized electrical maintenance activities. Approximately 20 full-time staff would be required for daily O&M activities, which would generate up to 20 round trips (40 one-way trips) per day. Permanent staff would be expected to arrive and depart the Project during typical peak commute periods. Furthermore, the Project would generate a very small number of truck traffic during operation and maintenance activities, as described above.

Complete commercial operation of the Project and its components is anticipated to occur by 2016. Therefore, traffic conditions were examined under Year 2016 conditions in order to evaluate the extent to which peak operational traffic would affect the surrounding transportation network. Consistent with the assessment of Year 2015 conditions, described above, the same average annual growth rates were applied to existing volumes along I-10 in order to determine Year 2016 traffic volumes.

As shown in Table 4.17-2, the increase in traffic associated with the O&M activities at the Project site would not change the Year 2016 LOS during the peak traffic periods along I-10, and these freeway segments would continue to operate at an acceptable level of service. The increased traffic volumes along I-10 would remain at levels less than the carrying capacity and would not deteriorate peak-hour LOS conditions along the freeway. Furthermore, the minimal amount of traffic generated by the Project during O&M activities would not result in any adverse queuing effects along the I-10 off-ramps during the morning and afternoon peak commute period.

Because increases in traffic associated with the Project O&M activities would not be substantial relative to Year 2016 conditions, the Project would not adversely affect traffic conditions over the course of a workday. In addition, O&M activities associated with the Project would not result in the temporary or permanent closure of roads or travel lanes; therefore, there would be no reduction in roadway capacities during this period of activity. Lastly, the minimal amount of traffic generated by the Project would not interrupt, interfere, nor limit access to any transit, bicycle, and pedestrian facilities in proximity to the site.

TABLE 4.17-2
YEAR 2016 AND YEAR 2016 PLUS PROJECT PEAK-HOUR TRAFFIC VOLUMES AND LEVEL OF SERVICE

Roadway/Segment	Travel Lanes	Capacity[a]	Year 2016 Conditions[b]		Year 2016 plus Project Conditions[c,d]	
			Volume	LOS	Volume	LOS
I-10 West of Mesa Drive	4	8,000	2,920	A	2,940	A
I-10 East of Mesa Drive	4	8,000	2,600	A	2,600	A

NOTES:
a Approximate two-way capacity in vehicles per hour (2,000 vehicles per hour per travel lane).
b Year 2016 traffic volumes without the added operation-related Project traffic.
c Year 2016 traffic volumes with the added operation-related Project traffic; truck trips are not included.
d Analysis assumes all full-time personnel would originate east of the site and would travel west of the site along I-10.

SOURCES: Caltrans, 2011; ESA, 2011.

Decommissioning

As stated in Section 2.7, *Decommissioning and Reclamation*, the Project is anticipated to be operational during a 30-year period; if no permit is extended beyond the 30-year period, the Project would cease operation. All Project components would be decommissioned, and the site would be restored to pre-Project conditions. Decommissioning would require approximately 6,000 truck trips, a workforce of approximately 300 workers, and approximately 24 months to complete. Based on these estimates, the workforce traffic during decommissioning activities would generate up to 300 roundtrips (600 one-way trips) per day and approximately eight truck trips per day, spread throughout the course of the day and scheduled outside typical peak-hour commute periods.

Furthermore, decommissioning activities would include dismantling the gen-tie line, telecommunications lines, switchyard, and distribution lines; these activities would be phased and would require approximately 3 weeks to complete.

Decommissioning Impacts

Because the number of workers and trucks required during decommissioning activities of the Project and its components would be less than during the peak construction period in 2015 (described above), the increased traffic during decommissioning would have less of an effect on traffic conditions than during peak construction; traffic flow along I-10 would operate at acceptable conditions during decommissioning. Furthermore, the increase in vehicle trips by the workforce during decommissioning activities (half of the peak number of workers during construction activities) would not result in any adverse queuing effects along the I-10 off-ramps during the morning and afternoon peak commute periods.

Similar to construction activities of the Project, as described above, decommissioning of most of the Project facilities would not require closure of any travel lanes and therefore would not reduce the roadway capacity on roads that provide access to the work sites; however, decommissioning of the gen-tie line and removal of spur roads would require activities within or adjacent to existing roadways. Although various decommissioning activities would occur over a short period in each location as decommissioning progresses along the alignment; roadways along or adjacent to Project facilities may require temporary closures of travel lanes and reduce roadway capacities during installation. As a result, temporary lane closures due to the aforementioned activities would adversely affect traffic conditions along surrounding roadways.

The short-term traffic increases during Project decommissioning activities, which would occur primarily on I-10, Mesa Drive, and portions of Hobson Way, would not substantially disrupt transit service provided by PVVTA. The increase in traffic and potential travel lane closures due to temporary activities would not reduce, disrupt, or eliminate access to existing bicycle and pedestrian facilities, and decommissioning of the Project therefore would not interfere with bicycle and pedestrian activities.

4.17.4 Alternative 2: Reduced Acreage

4.17.4.1 Direct and Indirect Impacts

Because the Alternative 2 construction workforce would be the same as the Proposed Action, and daily haul trips estimated for the Proposed Action are based on a phased construction schedule in which Units 1 and 2 would not overlap, daily worker commute and haul truck trip volumes are anticipated to be the same for Alternative 2 as for the Proposed Action, and therefore would have the same effect on the LOS of roadways in the study area. Such trips would occur for up to 24 fewer months; however, during the construction period, this Alternative would have the same effects with respect to transportation and traffic as the Proposed Action.

Alternative 2’s operation and maintenance staff would consist of approximately 13 full-time personnel, which is fewer than the Proposed Action; therefore, it would result in fewer daily commute trips. Additionally, although trips related to panel washing would occur on approximately 70 days per year, daily trip distribution would be the same as the Proposed Action. Although Alternative 2 operation and maintenance traffic would be slightly reduced compared to the Proposed Action, there would be no substantial difference between the impacts of Alternative 2 and those of the Proposed Action.

Because Alternative 2’s decommissioning workforce and daily haul trips to remove decommissioned equipment and materials would be the same as the Proposed Action, daily worker commute and haul truck trip volumes are anticipated to be the same for Alternative 2 as for the Proposed Action. Therefore, Alternative 2 would have the same effect on the LOS of roadways in the study area. Such trips would occur over a shorter decommissioning period under Alternative 2; however, during the decommissioning period, this Alternative would have the same effects with respect to transportation and traffic as the Proposed Action.

4.17.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.17.5.1 Central Route

During construction, operation, maintenance, and decommissioning, the Central Route would result in the same number of workers traveling to and from the site from the same locations as would be necessary for the Eastern Route proposed as part of the Project. Therefore, commute-related traffic generated during each phase of this Alternative would have the same impacts as the Proposed Action.

The Central Route would be slightly shorter than the proposed gen-tie line and access road route. Consequently, materials hauling associated with construction and decommissioning of this Alternative would result in a slightly reduced number of total truck trips. However, the daily distribution of truck trips would be the same as the Proposed Action, although these trips may occur over a slightly shorter time period. Therefore, there would be no substantial difference between the Central Route and the gen-tie line and access road proposed for the Project.

4.17.5.2 Western Route

During construction, operation, maintenance, and decommissioning, the Western Route would result in approximately the same number of workers traveling to and from the site from the same locations as would be necessary for the gen-tie line and access road route included in the Proposed Action. Therefore, commute-related traffic generated during each phase of this Alternative would have the same impacts as the Proposed Action.

The Western Route would be slightly longer than the proposed gen-tie line, and would not require a separate access road. Consequently, materials hauling associated with construction and decommissioning of the Western Route would result in a slightly increased number of total truck trips. However, the daily distribution of truck trips would be the same as the Proposed Action, although these trips may occur over a slightly longer time period. Therefore, there would be no substantial difference between the Western Route and the Proposed Action.

4.17.6 Alternative 4: No Action Alternative

If Alternative 4 were implemented, no changes to existing transportation and traffic conditions would occur, and the existing environmental setting would be maintained.

4.17.7 Cumulative Impacts

4.17.7.1 Geographic Extent/Context

For the purposes of the cumulative analysis of transportation and traffic impacts, only other projects that make or would make a substantial contribution to traffic at the same roadway segments as the Proposed Action (e.g., within the I-10 corridor) are considered. Because the volume of traffic generated during construction and decommissioning would not be particularly large and would be substantially less during operation and maintenance activities, only segments of I-10 in proximity to the Project site would experience any appreciable increase in traffic. Therefore, the geographic scope for cumulative impacts consists of the immediate vicinity of the proposed Project site where other projects might contribute traffic to the same segments of I-10.

4.17.7.2 Temporal Scope

The temporal scope for cumulative traffic impacts includes the construction, operation, maintenance, and decommissioning phases of the Project, because each phase would contribute traffic to roadways within the geographic scope.

4.17.7.3 Analysis of Cumulative Effects

Past development near the Project area includes those projects listed in Table 4.1-3. All of the projects listed in Table 4.1-3 have been implemented and so would contribute ongoing operational traffic to area roadways during the Project's construction, operation, maintenance, and decommissioning phases. Traffic associated with these past projects already contributes to existing traffic on the road network and, therefore, is accounted for as part of baseline conditions for the Project evaluated in Section 4.17.3.1, *Direct and Indirect Impacts*. The West-wide §368 Energy Corridors (project 6 in Table 4.1-3) consist of a number of designated energy corridors, of which three are located in the immediate Project vicinity. The corridors themselves would not directly generate any traffic, though future energy projects that would use these corridors could add traffic to roads in the Project area if those projects were sited and constructed within the Project area. The Kaiser Mine (project 9 in Table 4.1-3) was closed in 1983 and therefore is outside of the temporal scope of the cumulative effects analysis. Therefore, these projects have not resulted in cumulatively adverse conditions because they do not conflict with established standards of performance of the vehicle circulation system in the area because the system is currently operating at acceptable LOS. In addition, past development has not been located such that or contained features that would adversely affect air travel.

Furthermore, the traffic analysis already accounted for traffic generated by these existing projects in the study's baseline data (Year 2015 to evaluate construction-related impacts and Year 2016 to evaluate operational-related impacts, respectively). The results of the traffic analysis demonstrate that the vehicular circulation would continue to operate acceptably and would not conflict with established standards of performance. Table 4.1-4 provides a list of reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM-authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead Agencies consider reasonably foreseeable. Table 4.1-4 lists foreseeable projects in the Project area, which is the I-10 corridor in eastern Riverside County. Projects D, I, M, N, X, and Y (see Figure 4.1-1) have the potential to affect the local road network. Additionally, all the projects listed in Table 4.1-4 would generate traffic along the I-10 corridor.

Construction

Cumulative impacts would be greatest if the peak construction period of all of these projects overlapped. Although this worst-case scenario is unlikely, even if it were to occur, it is unlikely that the LOS of the affected freeway segments would degrade to unacceptable service levels of LOS D or worse, which is the allowable limit in the Riverside County General Plan (Riverside County, 2009) because segments of I-10 near the Project site currently operate at LOS A. Additionally, as stated, Project-generated traffic during any phase would not be substantial enough to degrade freeway LOS to unacceptable conditions.

Cumulative impacts to segments of I-10 have been considered because it is likely that construction vehicle trips from foreseeable future projects and Project would have the greatest potential to combine cumulatively on I-10. It is likely that a portion of construction traffic, including worker and haul trucks, for all projects shown on Figure 4.1-1 would traverse the same portion of I-10 as Project construction-related traffic. Although the construction period, workforce, and schedule for the majority of foreseeable future projects are generally unknown, in a worst-case scenario where construction peak periods overlapped for all projects proposed in the Project area, the LOS of I-10 could be temporarily degraded, but likely would not be degraded below the acceptable LOS C, and would not result in any permanent LOS degradation. Levels of congestion (delay) at on- and off-ramps along I-10 could be adversely affected due to the temporary influx of construction-related traffic; however, even a worst-case scenario would not likely exceed the capacity of I-10, which in this area has two lanes in both directions to accommodate the anticipated increase in traffic while maintaining adequate traffic flow along the freeway mainline.

APM TRANS-1 would reduce the Project’s construction-related contribution to cumulative traffic impacts. Based on the short-term nature of construction, any increase in vehicle trips and transportation-related impacts would be temporary. However, even with implementation of the APMs during construction of the Project, implementation of a coordinated transportation management plan is recommended to reduce the Project’s contribution to any potential traffic impacts to the surrounding network. Implementation of Mitigation Measure TRN-2 would reduce potential cumulative traffic impacts.

Operation and Maintenance

Project operation and maintenance is estimated to generate a total of about 40 daily trips, with 20 trips during the a.m. peak hour and 20 trips during the p.m. peak hour. However, because operation and maintenance of the Project would generate substantially less traffic than construction or decommissioning activities, and because the construction phase of the Project would cause no adverse traffic impacts (as stated above), no adverse impacts would occur due to the traffic generated during the operation and maintenance phase of the Project.

Decommissioning

During the closure and decommissioning of the Project, it is unknown what would be the potential cumulative contribution of the Project to transportation and traffic impacts, as the number and proximity of cumulative projects in 30 years (expected life of the Project) is unknown. It is assumed that the analysis of cumulative construction impacts discussed above could occur during decommissioning, and that the mitigation measures implemented during construction activities also would be applicable to decommissioning activities.

4.17.8 Mitigation Measures

TRN-1: The Applicant and/or its contractor shall prepare and implement a traffic control plan to reduce construction- and decommissioning-related traffic impacts on the roadways at, and near the work site, as well as to reduce potential traffic safety hazards and ensure adequate access for emergency responders. The Applicant and/or its contractor shall coordinate development and implementation of this plan with the BLM and other jurisdictional agencies (e.g., Riverside County, City of Blythe, and Caltrans), as appropriate. To the extent applicable, the traffic control plan shall conform to Part 6 (Temporary Traffic Control) of the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010), and shall include, but not be limited to, the following elements:

1. Implementing circulation and detour plans to minimize impacts on local road circulation during temporary lane closures. Flaggers and/or signage shall be used to guide vehicles through and/or around the work zone.

2. Identifying truck routes designated by Riverside County and local jurisdictions. Haul routes that minimize truck traffic on local roadways shall be utilized to the extent possible.

3. Providing sufficient-sized staging areas for trucks accessing work zones to minimize disruption of access to adjacent public right-of-ways.

4. Controlling and monitoring worker vehicle movement through the enforcement of standard construction specifications by on-site inspectors.

5. Scheduling truck trips outside the peak morning and evening commute hours to the extent possible.

6. Limiting the duration of lane closures to the extent possible.

7. Storing all equipment and materials in designated contractor staging areas on or adjacent to the worksite, such that traffic obstruction is minimized.

8. Implementing roadside safety protocols. Advance “Road Work Ahead” warning and speed control signs (including those informing drivers of state-legislated double fines for speed infractions in a work zone) shall be posted to reduce speeds and provide safe traffic flow through the work zone.

9. Providing advance notification to administrators of police and fire stations (including fire protection agencies), ambulance service providers, and recreational facility managers of the timing, location, and duration of construction and decommissioning activities and the locations of detours and lane closures, where applicable. Maintain access for emergency vehicles within, and/or adjacent to, roadways affected by construction and decommissioning activities at all times.

10. Repairing and restoring adversely affected roadway pavements to their pre-construction condition.

TRN-2: Prior to construction, the Applicant shall develop a Coordinated Transportation Management Plan and work with the BLM and Riverside County to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the planned

Project facilities, and to address the transportation impact of the multiple overlapping construction projects within the vicinity of the Project in the region. The transportation management plan shall include, but not be limited to, the following requirements:

1. Coordination of individual traffic control plans for Project and nearby projects.
2. Coordination between the contractor and Riverside County in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address:
    a. Full and partial roadways closures;
    b. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices;
    c. Bicycle detour plans, where applicable;
    d. Parking along arterial and local roadways; and
    e. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites.
3. Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.

4.17.9 Residual Impacts after Mitigation Incorporated

Following the implementation of mitigation measures identified in Section 4.17.8, the amount of Project-generated traffic within the study area would not exceed thresholds and would not cause or contribute to adverse cumulative conditions.

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4.18 Utilities and Service Systems

4.18.1 Methodology for Analysis

Waste Handling

Projected wastes were evaluated in terms of landfill capacity and compliance with applicable laws, ordinances, regulations, and policies, for both solid wastes and wastewater. The state and local environmental requirements listed in Section 3.18, *Utilities and Service Systems*, have been established to ensure the safe and proper management of applicable wastes in order to protect human health and the environment.

Water Supply

To evaluate water availability, a water supply assessment was completed in support of the Project (AECOM, 2011). Water demands of the Project are discussed in Chapter 2, *Proposed Action and Alternatives*, with additional detail in Section 4.20, *Water Resources*. The Project's water demands were evaluated in comparison with the available water supply and historic regional water consumption levels.

Other Utilities and Services

Other utilities and services, including wastewater treatment, electricity, stormwater, and cell phone towers, were considered as discussed in Section 3.18, *Utilities and Service Systems*.

4.18.2 Applicant Proposed Measures

There are no APMs to address potential effects to utilities and service systems.

4.18.3 Alternative 1: Proposed Action

4.18.3.1 Direct and Indirect Impacts

Construction, Operation, and Maintenance

Construction, operation, and maintenance of the Project would result in the installation and operation of water supply, water treatment, wastewater treatment, and stormwater management facilities on site. These facilities would directly support the Project, and would not rely on, nor would they require, additional capacity or other support from off-site water supply, water treatment, or wastewater treatment facilities, including municipal or other regional facilities. Stormwater from the Project site would drain through drainage canals maintained by PVID. However, the Project would result in only very minor changes in stormwater flows emanating from the site. Therefore, the Project would not affect the operation or function of existing water supply, water treatment, wastewater treatment, or stormwater management facilities, and would not require the expansion or modification of such facilities. Additionally, these facilities would be installed and operated so as to maintain compliance with all applicable regulations, such that no regulatory conflict would occur with respect to the installation and use of these facilities.

Water Supply and Water Availability

Total construction period water demand is anticipated to be 750 AF over 46 months. Total operation period water demand is anticipated to be 16 to 23 AFY for Unit 1 and 15 to 22 AFY for Unit 2. Over the proposed 30-year operational period, total water demand would be between 930 and 1,350 AF. This amounts to a combined water demand of approximately 1,680 to 2,100 AF for construction and operation.

The most practical water supply option for the Project is groundwater pumped from the underlying aquifer. There is no industrial water purveyor in the area, no public water system with capacity to serve the Project, nor are there other water sources such as reclaimed water or surface waters that would not require entitlement. Furthermore, groundwater underlying the Project is not adjudicated.[1] Therefore, the Project's water needs would be met by on-site groundwater wells. The water system would be designed and constructed to meet just the needs of the Project, and would be classified by the CDPH as a non-community, non-transient water system because the Project's water system would provide water for use by on-site employees and to support solar plant operation and maintenance.

As discussed in Section 3.20, *Water Resources*, the PVMGB directly underlies the Project site and is hydrologically continuous with the PVVGB. Therefore, both basins are considered together in support of the water supply assessment, for the purposes of evaluating potential water supply availability. The two basins are collectively referred to as the Palo Verde Groundwater Basin (PVGB) throughout the remainder of this section. Additional information with respect to the composition of aquifers and depth to groundwater, as well as other parameters relevant to groundwater and aquifer physical properties, are discussed in Section 3.20, *Water Resources* and the water supply assessment (AECOM, 2011).

An overdraft assessment was completed in support of the water supply assessment. As indicated therein, the California DWR estimates that the total groundwater storage capacity in the PVGB is approximately 6,840,000 AF. Natural recharge in the PVMGB is estimated to be 800 AFY, with recharge by underflow from Chuckwalla Valley estimated to be about 400 AFY (DWR, 2004).

Basin groundwater balance was also evaluated in support of the water supply assessment. The water balance was developed for the PVGB (AECOM, 2011) based on numerous sources of information including: stream flow data from the Colorado River, PVID diversion and return data, and groundwater pumping estimates.

The water balance for the PVGB is documented in detail in Section 3.20, *Water Resources*. The water balance provided reflects the relative stability of the groundwater levels since the mid- to late 1980's. The observed stability reflects management of the diverted water from the Colorado River in support of irrigation, plus return of groundwater through PVID drains. Water levels have fluctuated only a few feet in response to irrigation, indicating a balance between inflow and outflow of groundwater within the PVGB. Overall, a water balance of 426,600 AF is estimated from a balance of recharge and discharge elements. Key elements of the groundwater balance for recharge include agricultural return and canal seepage. Together, these elements make up about

[1] In adjudicated groundwater basins, the groundwater rights of all overliers and appropriators are court-determined.

97 percent of the total recharge to the PVGB. The discharge or outflow of groundwater largely consists of the measured discharge from the drains, the unmeasured return or groundwater discharge to the river, and evapotranspiration loss from non-native vegetation along the river within the groundwater basin. These elements make up 97 percent of the total outflow, of which 84 percent discharges from the drains (AECOM, 2011).

The water supply assessment also included an evaluation of potential cumulative water supply impacts in order to evaluate the effects of groundwater withdrawal by multiple proposed renewable energy projects within the Palo Verde Valley. In addition to the Project, seven other renewable energy projects were identified in the Palo Verde Valley with a combined annual operational water requirement of about 4,200 AF (AECOM, 2011). The Project represents about 0.7 percent of the total combined annual operational water use (AECOM, 2011). Inclusive of both construction and operational water requirements through the end of Project O&M, the combined cumulative total water use from these projects is estimated to be about 131,000 AF. This represents about 2 percent of the 6,840,000 AF of estimated groundwater storage in the PVGB. The results of the research showing the proposed water use and pumping schedule for each of the projects are summarized in Section 4.20, *Water Resources*.

Project construction and operation would require a total of approximately 1,680 to 2,100 AF of water over the construction period plus the 30-year operation period. This volume of water represents about 0.02 percent of the total groundwater storage (6.84 million AF) reported by DWR for the PVGB. Therefore, potential effects on groundwater would be minimal over the life of the facility (AECOM, 2011).

Solid Waste

The Project would generate solid waste during construction, operation, and maintenance. All handling and processing of construction, demolition, and inert debris would be in accordance with applicable regulatory requirements as described in Section 2.3.1.3.10. Solid waste would include recyclable materials such as metals and plastics, as well as various construction materials and worker generated waste that would include a combination of recyclable and non-recyclable materials. Recyclable materials would be recycled as described in Tables 2-4, Summary of Construction Waste Streams and Management Methods and 2-5, Summary of Operation Waste Streams and Management Methods. Non-recyclable, non-hazardous solid waste materials would be landfilled in accordance with state and local regulations. All solid waste generated on site would be required to be removed at least once per week by the approved franchise hauler.

As discussed in Section 3.18, *Utilities and Service Systems*, landfills in Riverside County have a combined capacity available that is sufficient to support disposal for at least the next 15 years. The Blythe landfill, which is located closest to the Project, has sufficient capacity to continue to provide solid waste disposal through 2047. Therefore, sufficient capacity is anticipated to be available for waste disposal. Hazardous wastes are treated separately. Please refer to Section 4.9, *Hazards and Hazardous Materials* for additional discussion of hazardous wastes.

Electricity

Operation of the Project would result in the generation of electricity. Transmission of generated electricity would be facilitated by connection to a new 500 kV transmission line, DPV2. The transmission line has been approved but not yet constructed. However, it is anticipated that this transmission line would be sufficient to convey power from the Project, even in combination with other anticipated solar power projects along the I-10 corridor.

Decommissioning

Decommissioning of the Project would involve removal and/or abandonment in place of the water supply, water treatment, wastewater treatment, and stormwater facilities that are proposed. The removal of these facilities would not affect the operation or function of other water supply, water treatment, wastewater treatment, or stormwater management facilities that are located in the vicinity of the Project site. Decommissioning would result in the generation of additional solid waste. Anticipated solid waste flows include concrete, metal, plastics, and photovoltaic panels. Recyclable materials would be removed from the waste stream and recycled prior to disposal of solid waste in an approved landfill. Solar PV panels would be reused if possible and then recycled at the end of their useful life. Based on the CIWMP for Riverside County, it is anticipated that at least 15 years of capacity would be available in landfills, countywide, at the time of decommissioning. Also, based on current estimates, the Blythe Landfill would still have at least 10 years of remaining capacity available at the time of decommissioning. Therefore, sufficient capacity is anticipated to be available to support decommissioning.

4.18.4 Alternative 2: Reduced Acreage

4.18.4.1 Direct and Indirect Impacts

Construction, Operation and Maintenance

Construction, operation, and maintenance of Alternative 2 would result in the installation of similar water supply, water treatment, wastewater treatment, and stormwater management facilities on site, except that these facilities would be sized appropriately for Alternative 2. Similar to the Proposed Action, Alternative 2 would not result in or require alteration of off-site facilities in support of these functions. Similarly, water requirements for Alternative 2 would reflect reduced demand, in proportion to the reduced footprint area of Alternative 2 in comparison to the Proposed Action. Therefore, potential effects on water supply would be minor. The total volume of solid waste generated during construction, operation, and maintenance of Alternative 2 would be of similar composition to that discussed for the Proposed Action, but reduced in total volume, and therefore would have a reduced effect on available landfill capacity. Similar to the Proposed Action, waste disposal would comply with applicable laws. Finally, Alternative 2 would also be served by the anticipated 500 kV DPV2 transmission line, which would be sufficient to convey power from this Alternative.

Decommissioning

Decommissioning of Alternative 2 would be similar to that described for the Proposed Action, except that activities would be reduced in intensity, in proportion to the reduced size of Alternative 2. Alternative 2 would involve removal and/or abandonment in place of the water supply, water treatment, wastewater treatment, and stormwater facilities that are proposed, and would not affect the operation or function of other nearby facilities. Decommissioning would result in the generation of additional solid waste, but in reduced volumes in comparison to the Proposed Action. Recyclable materials would be removed prior to disposal in an approved landfill, and similar to the Proposed Action, it is anticipated that sufficient landfill capacity would be available at the time of decommissioning, and decommissioning-related effects would be minimal.

4.18.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.18.5.1 Central Route

The Central Route would cause the same types of impacts related to utilities and service systems as the Proposed Action. The Central Route would be slightly shorter than the proposed gen-tie line and access road route. Consequently, water consumption and solid waste generation associated with construction, operation, maintenance, and decommissioning of this Alternative would be slightly reduced compared to the Proposed Action. Nonetheless, there would be no substantial difference between the Central Route and the Proposed Action.

4.18.5.2 Western Route

The Western Route would cause the same types of impacts related to utilities and service systems as the Proposed Action. The Western Route would be slightly longer than the proposed gen-tie line and access road route. Consequently, water consumption and solid waste generation associated with construction, operation, maintenance, and decommissioning of this Alternative would be slightly increased compared to the Proposed Action. Nonetheless, there would be no substantial difference between the Western Route and the Proposed Action.

4.18.6 Alternative 4: No Action Alternative

Because the No Action Alternative would not result in increased water consumption, generate wastewater, or generate solid waste, it would have no impact on the capacity of utilities and service systems to serve demand.

4.18.7 Cumulative Impacts

The geographic scope of the cumulative impacts analysis for utilities and service systems includes the PVGB, the areas draining into PVID stormwater infrastructure, and the areas served by the Blythe Landfill. The temporal scope includes the construction, operation and maintenance, and decommissioning periods.

The cumulative analysis provided here considers implementation of the Project in combination with other past, present, and reasonably foreseeable future projects. Tables 4.1-3 and 4.1-4 provides a list of such projects along the I-10 corridor, which were considered in support of this analysis.

The Project would result in an impact with respect to stormwater drainage facilities. Similar situations are anticipated for the other projects considered because many of them drain into desert sinks. Where other projects could potentially affect downstream drainage facilities, it is anticipated that mitigation would be applied on a case-by-case basis, in order to avoid adverse effects.

With respect to water supply, as discussed previously, the Project would have a minor effect on groundwater storage in the PVGB. According to the water supply assessment prepared for in support of the Project, when considered in combination with other projects, given the fractional contribution of the Project to the total water use in the PVGB, the Project would not represent a noticeable contribution to the water resource impacts on the basin. Some of the projects considered in the cumulative analysis are located in other groundwater basins, for instance, within the Chuckwalla Valley Groundwater Basin. Because the Project is located downgradient of the Chuckwalla Valley Groundwater Basin, pumping in support of the Project is not anticipated to result in a noticeable contribution to changes in groundwater level in that basin.

Regarding landfill capacity, as discussed previously in this section and in Chapter 2, *Proposed Action and Alternatives*, it is anticipated that much of the solid waste generated from the Project would be recycled, including during decommissioning. It is presumed that other proposed projects would implement similar measures for waste reduction. In particular, similar to the Project, decommissioning wastes for other solar projects are anticipated to be largely recyclable, and recycling this waste would minimize impacts on landfills. Additionally, Riverside County landfills, including the Blythe Landfill, are anticipated to have sufficient capacity available through the foreseeable future. Therefore, while all of the projects, when considered together, would generate a larger volume of solid waste than the Project alone, the total volume of waste that would be landfilled is not expected to exceed the permitted capacity of available landfills.

Finally, with respect to operation of the existing electric utility transmission lines, the proposed 500 kV DPV2 transmission line has been designed so as to provide power transmission capacity to support the reasonably foreseeable projects within the I-10 corridor, including the Project.

4.18.8 Mitigation Measures

Implementation of the following mitigation measure would address potential impacts associated with utilities and service systems.

UTILITIES-1: In order to ensure that the selected reverse osmosis brine disposal method would not conflict with Colorado River RWQCB requirements or policies, the Applicant shall not use brine as a land-applied dust suppressant or apply brine to the ground for any other purpose.

4.18.9 Residual Impacts after Mitigation Incorporated

Residual impacts with respect to utilities and services include increased disposal volumes for solid waste during the lifetime of the Project, in comparison to the baseline, although such increases in solid waste disposal are anticipated to be manageable within available landfill capacities. Total water supply available in the PVGB would be reduced slightly as a result of Project implementation; however, it is likely that such reductions would not be noticeable at a distance of over 1 to 2 miles from the Project site. Finally, drainage conditions could be altered slightly as a result of Project implementation, such as slightly altered concentration times or flow regimes. However, as discussed previously, it is anticipated that existing infrastructure is sized sufficiently so as to be able to handle any anticipated variability in stormwater hydrology.

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4.19 Visual Resources

This section discusses effects on visual resources that would occur with implementation of the Proposed Action and alternatives, cumulative effects, and mitigation measures to reduce visual contrast. Overall, the MSEP would result in long-term visual alteration to approximately 4,496 acres of land, nearly all of which has been classified as B-Quality[1] scenery. One exception is approximately 5 miles of off-site linear facilities, south of I-10, which would be within land classified as C-Quality scenery. The land altered by the MSEP solar units is considered to have a moderate visual sensitivity, whereas off-site linear facilities located south of the southern border of the approved BSPP would occur on land classified as having a high visual sensitivity.

4.19.1 Methodology for Analysis

There are two forms of visual analysis associated with the Proposed Action. The first visual analysis is to determine administrative compliance of the proposed action or alternatives with the Interim VRM Classes. The second analysis is to determine the extent of visual impact or change from the existing condition that will result from the proposed action or alternatives.

Both analyses are achieved using the BLM Visual Resource Contrast Rating System (H-8431) which provides a method for systematically evaluating the visual contrast between a Proposed Action or alternatives and the existing landscape plus an assessment of ten human and environmental factors (distance, angle of observation, length of viewing time, size & scale, season of use, lighting conditions, recovery time, spatial relationships, atmospheric conditions, and motion). The results of the Visual Contrast Rating analysis provide a means for determining the cause of visual contrast that exceeds what is administratively allowable and information to describe how the land modification will change the existing visual landscape.

Visual contrast is a measure of divergence in the classic design elements of form, line, color, and texture, and applied to landscapes in accordance with the BLM's Handbook H-8431. Administrative compliance is found when the Proposed Action or an alternative meets or exceeds the allowable level of visual contrast set by the Interim VRM Class objectives. If the Proposed Action or alternatives are nonconforming, then mitigation measures sufficient to bring the design into compliance would need to be identified and implemented. If a project cannot be mitigated to meet the VRM Class objectives, then the application may be denied, or the proposal redesigned or relocated to meet the objective.

The assessment of visual contrast is distinct from conclusions of *visual impact* presented in this section. A measure of visual impact is evaluated in terms of changes to scenic quality, sensitivity levels, and visibility that would occur on the ground as a result of the development of the Proposed Action or alternatives.

[1] Scenic quality is rated in three categories from A (most scenic) to C (least scenic). See Section 3.19 for a discussion of scenic quality ratings.

The MSEP is evaluated for conformance with the following VRM objectives:

> **VRM Class III:** The objective of this class is to ***partially retain*** the existing character of the landscape. The level of change to characteristic landscape should be ***moderate***. Management activities may attract attention but ***should not dominate the view of the casual observer***. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
>
> **VRM Class II (applies only to the gen-tie line corridor north of I-10 and south of the approved BSPP):** The objective of this class is to ***retain*** the existing character of the landscape. The level of change to characteristic landscape should be ***low***. Management activities may be seen, but ***must not attract the attention of the casual observer***. Any change must repeat the basic elements of form, line color and texture found in the predominant natural features of the characteristic landscape.

Since the overall VRM goal is to minimize visual impacts, mitigation measures are recommended for all adverse contrasts that could be reduced, even if the MSEP or alternatives meet VRM objectives (mitigation measures are listed in Section 4.19.8). In addition to permanent visual contrast created in the landscape, the MSEP is analyzed for adverse effects of lighting and glare, as well as temporary construction disturbances.

4.19.1.1 Visual Contrast Rating Process

The degree to which the MSEP adversely affects the visual quality of a landscape relates directly to the amount of visual contrast between it and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land, water, vegetation, structures) then assessing the contrast introduced by the Project in terms of the basic design elements of form,[2] line,[3] color, and texture. The contrast of the MSEP with landscape elements then is rated as none, weak, moderate, or strong, as defined in Table 4.19-1. The purpose of this method is to reveal elements and features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a proposed action or activity. This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating (BLM, 1986), and documented using BLM Form 8400-4 (see Appendix F).

The criteria for visual contrast are aligned with the management objectives for each Interim VRM Class. For example, if a project results in a weak visual contrast, it is likely to be in conformance with Interim VRM Class II, whereas a project that results in a moderate contrast would likely be in conformance with VRM Class III objectives but would not conform to VRM Class II objectives.

[2] Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.

[3] Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (boldness, complexity, and orientation) from existing lines.

**TABLE 4.19-1
VISUAL CONTRAST RATINGS**

Degree of Contrast	Criteria	Consistent with…
None	The element contrast is not visible or perceived.	VRM Class I - IV
Weak	The element contrast can be seen but does not attract attention.	VRM Class II - IV
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.	VRM Class III - IV
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	VRM Class IV only

SOURCE: BLM, 1986

4.19.1.2 Selection of Key Observation Points

The contrast rating is completed from the most critical viewpoints, or Key Observation Points (KOPs). The intent of establishing KOPs is to visualize the contrast created by the Proposed Action from locations most representative of how the public perceives the affected landscape. The “public” may include highway travelers, travelers on local roads, residents in surrounding interspersed private lands, OHV users, dispersed recreational users in surrounding wilderness areas, or users of BLM facilities, such as long-term visitor areas. The sensitivity of these diverse user groups to changes in the landscape are influenced by a number of factors, including how prominent the view of the Proposed Action is (in terms of scale, distance, and angle of observation), the frequency and duration that viewers are exposed to the view, and whether the viewer groups are aware of their surroundings (BLM, 1986). According to the BLM Rangers from the PSSCFO, OHV use in and around the MSEP site is minimal with not more than, conservatively, a few hundred visits in a year during the cool months (September through May). In addition, the Outdoor Recreation Planner for the PSSCFO has observed that visitation to the surrounding designated wilderness is generally very low, with visitation to the Big Maria Mountains Wilderness somewhat higher than in the Palen-McCoy Wilderness, due to its proximity to the more populated Colorado River Valley to the east, and the City of Blythe, to the south. In general, sightseeing and day use touring by locals is the predominant use pattern on the affected routes.

Based on the above factors and in consultation with BLM staff, seven KOPs (see Figure 3.19-2) were selected to evaluate the change of visual contrast between MSEP site’s existing conditions and proposed altered conditions. No KOPs were selected in the surrounding BLM wilderness areas because accessibility is limited, the level of use is low, and the MSEP would be visible from only a small fraction of the wilderness lands (see Figure 3.19-2). However, KOP 3 is included to approximate the elevated angle of view that could be experienced by low numbers of dispersed recreational users accessing the Big Maria Mountains. The location and characteristics of each KOP are summarized in Table 4.19-2.

TABLE 4.19-2
KOP LOCATION AND CHARACTERISTICS

ID	Name	View of	View distance & direction	User type	Use and visual exposure description
KOP 1	Fairway Villas and Mesa Golf Community	Solar Plant Site and Gen-Tie Line	6 miles west	Local Motorists, Some Residences	Brief views by local motorists accessing housing, potentially long-duration views from several residences, low view angle, partially obscured
KOP 2	Midland LTVA	Solar Plant Site and Gen-Tie Line	5.6 miles southwest	Day-use Visitors/ Campers	Use of LTVA by day users, RVs, and campers from September through May. Long-duration views, low to slightly elevated view angle, mostly unobstructed but occasionally filtered by vegetation
KOP 3	Foot of the Big Maria Mountains	Solar Plant Site and Gen-Tie Line	8.2 miles southwest	Dispersed Backcountry Users, OHV Users	Very low amount of use by backcountry OHV users accessing Big Maria Mountains Wilderness, access is difficult, and requires hiking from OHV route, unobstructed and elevated view angle
KOP 4	BLM Kiosk at Midland and Arlington Mine Road	Solar Plant Site	8.4 miles south	Local Motorists, OHV Users	Low amount of use by OHVs, occasional truck traffic, slightly elevated view angle, partially obstructed by topography
KOP 5	Open OHV Route No. 661085	Solar Plant Site	3.6 miles south-southwest	OHV Users	Low amount of use by OHVs, slightly elevated view angle, partially obstructed by topography
KOP 6	Eastbound I-10	Gen-Tie Line	2.2 miles southeast	Motorists	Numerous travelers exposed to view for brief periods
KOP 7	Westbound I-10	Gen-Tie Line	1 mile southwest	Motorists	Numerous travelers exposed to view for brief periods

These KOPs were chosen to represent a mix of user types and viewer experiences. The visual contrast created by the MSEP is rated using simulations from each of these KOPs, and is used to represent the visual change experienced from different locations and viewer types.

4.19.1.3 Visual Simulations

KOP photos were taken using a Nikon D90, 52mm lens, with a resulting horizontal field of view ranging from approximately 50 to 80 degrees. Computer modeling and rendering techniques were performed by TetraTech Inc. to produce the simulated images of the views of the site as they would appear from each KOP after the completion of construction of both solar units under the Proposed Action. Existing topographic and engineering (ArcGIS and AutoCAD) data were utilized to construct 3D digital and photographic images at eye level height (5.5 feet) of the generation and linear facilities. These images were combined with the digital photography from each KOP to produce a complete computer-aided image of the energy generating facility and portions of the gen-tie line. The model typically then is blended into the photograph by overprinting lighting conditions and atmospheric haze. However, due to KOP distance and moderately hazy conditions, this step would have made the MSEP indistinguishable within many of the simulations. Therefore, the simulations presented in this section do not blend the model of the MSEP model into the photograph so as to approximate the view on a clear, haze-free day.

4.19.2 Applicant Proposed Measures

There are no APMs to address potential effects to visual resources.

4.19.3 Alternative 1: Proposed Action

The Proposed Action would convert approximately 4,496 acres of naturally appearing desert plain to an industrial facility characterized by complex geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character. Most of the developed area would be covered with solar PV panels. Solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials and covered with an anti-reflective coating. Today's panels reflect as little as 2 percent of the incoming sunlight depending on the angle of the sun and assuming use of anti-reflective coatings (FAA, 2010). An example of a solar PV development adjacent to Palo Verde College in the Project vicinity is shown in Figure 3.19-1b. This facility is much smaller in scale than the proposed MSEP, but it provides a scaled-down example of a solar PV field as it might appear in a foreground view.

The MSEP solar field would occupy most of the disturbed area (4,227 acres, or 94 percent of the total disturbed area), whereas electrical substations and transmission facilities, a switchyard, an O&M building, a water treatment area, and access roads would take up the rest of the disturbed area. Most of the facility, including the solar field, would be low-profile, and would not exceed 10 feet in height. Some of the ancillary facilities, located primarily on the southeast section of the solar field, would have greater heights. The proposed gen-tie line leading away from the main generation facility would be approximately 70 to 145 feet tall, depending on the location and local terrain, with final heights to be determined during detailed design. Approximate dimensions of proposed facilities are provided below:

Solar Field

a. *Solar field*: Linear arrays of PV modules 6 to 10 feet above grade, at a maximum

b. *Solar inverters*: Overhead shade would be 10 to 12 feet tall and the equipment enclosure, if used, would be up to approximately 35 feet long by 10 feet wide by 10 feet tall.

c. *Security fence*: Chain-link fence around the perimeter, 8 feet tall, with 3-strand barbed wire.

d. *Weather station*: One or more meteorological towers (aluminum lattice) up to approximately 30 feet tall.

Operations and Maintenance Area

a. *Operations and Maintenance Building*: A pre-engineered metal building approximately 17 feet high at its peak with a neutral-colored metal siding and roof.

b. *Lighting*: During construction, temporary service poles would be 18 feet tall. During operations, lighting would be affixed to O&M areas and security gates.

c. *Water Treatment*: A free-standing water treatment facility would be a pre-fabricated steel building on a concrete foundation with a maximum height of 17 feet.

d. *Water Storage*: Three cylindrical on-site water tanks ranging in height from 10 to 20 feet, and ranging from 9 to 26 feet in diameter.

Off-site Structures

a. *Gen-Tie Line*: Monopoles and/or H-frames approximately 70 to 145 feet tall and approximately 800 to 1,000 feet apart; transmission and telecommunication wires.

b. *Distribution Line*: Wooden poles approximately 50 feet high and approximately 150 feet apart; distribution wires.

Lighting requirements are discussed in detail in Chapter 2. During construction, lighting would be located in the construction trailer staging area, parking area, and around site security facilities and would be mounted on temporary service poles approximately 18 feet high. Lighting in other areas is not planned for construction activities; however, if required, it would be limited to the locations and amounts needed to ensure safety and would be focused downward, shielded, and directed toward the interior of the site. During operation and maintenance, lighting would be provided at the O&M building, Unit 1 and Unit 2 substations, site entrance, and switchyard. Exterior security lighting would be installed to provide for safe access to Project facilities as well as visual surveillance. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required, and all lights would be hooded and directed to minimize backscatter and off-site light.

4.19.3.1 Direct and Indirect Impacts

As discussed in Section 3.19, *Visual Resources*, the MSEP has been proposed in a topographically favorable location for at least two reasons. First, the MSEP would be constructed at a somewhat higher elevation relative to I-10, the Blythe Airport, and the northwestern fringes of the City of Blythe. This would result in a greater potential for intervening topography to diminish or shield views of the Project, and means that the MSEP solar field would not be visible at all from the Palo Verde Valley. Second, there are two subtle knolls along a southwest-trending line on to the south and east of the MSEP site. It is likely that these two subtle topographic rises would aid significantly in shielding the size and scale of the MSEP for areas to the south and southeast. The entire solar field is mostly shielded from view from the most highly traveled areas to the south, such as I-10 and Hobson Way; the only paved public roadway whose viewshed is exposed to unobstructed views of the MSEP solar field for a relatively long period of time is Midland Road. The MSEP solar array and portions of the gen-tie line would be visible in westerly views from Midland Road for a period of approximately 12 minutes, assuming a vehicle travel speed of 50 miles per hour.

As discussed above, the primary tool used to analyze visual impacts of the MSEP is BLM's visual contrast rating system, which was used to analyze the visual impacts of the project from seven KOPs. Figures 4.19-1 through 4.19-7 present both the existing (figures numbers followed by "a") and simulated (figures numbers followed by "b") conditions at each of the seven KOPs. Documentation of the visual contrast ratings (BLM Form 8400-4, Visual Contrast Rating Worksheet) is included in Appendix F, and summarized below in Table 4.19-3.

Overall, the proposed solar field would cause the greatest visual contrast in the character elements of line and color. From common public viewpoints, the facilities would be so distant that the form

TABLE 4.19-3
VISUAL CONTRAST RATING SUMMARY

ID	Name	Form	Line	Color	Texture	Contrast Summary
KOP 1	Fairway Villas Golf Community	None	Weak	Weak	None	Due to distance and screening elements, much of the visual contrast would be difficult to perceive. The gen-tie line would be visible, but so diminished in the scene that it would not attract attention. Background mountains and foreground elements would remain dominant in the scene. Hazy conditions would further mute the facility contrast.
KOP 2	Midland LTVA	None	Moderate	Moderate	Weak	A slightly superior angle of view would cause the solar field and some ancillary facilities to become visible as a narrow wedge. Color contrasts and sharp edge lines would have the greatest influence on the visual contrast of the facility. For LTVA users, the MSEP would begin to attract attention, but would not dominate the character of the landscape. Hazy conditions would further mute the facility contrast.
KOP 3	Foot of the Big Maria Mountains	Weak	Moderate	Moderate	Moderate	From the elevated vantage point of KOP 3, views of the valley floor would be large and less narrowly confined. From this distance, facility heights would still be insufficient to create an appreciable contrast in form with the flatness of the valley floor, but the shape and texture of the solar field would become more apparent relative to KOP 2. The entire site extent would be visible, and the visual change would possibly attract the attention of observers who are attuned to changes in the landscape, such as backcountry hikers seeking solitude and unconfined recreation. However, due to the distance, dark color, and narrow shape, the MSEP would not dominate the character of the landscape as the main focus is closer views of the valley floor, and the elongated, pyramidal mountainous backdrop. Hazy conditions would further mute the facility contrast.
KOP 4	BLM Kiosk at Midland and Arlington Mine Road	None	Moderate	Moderate	Weak	From this vantage point, the MSEP solar field would be partially visible, with the remainder being partially blocked by a subtle gain in foreground topography. For viewers travelling on the unpaved Arlington Mine Road, the visual contrast would be similar to that seen from KOP 2 for the same reasons. For OHV users and the occasional truck traffic on the road, the MSEP site would begin to attract attention, but would not dominate the character of the landscape. Hazy conditions would further mute the facility contrast.
KOP 5	Open OHV Route No. 661085	None	Weak	Weak	Weak	While this KOP is closest to the MSEP site, foreground topography would largely screen it from view due to the subtly undulating topography of the alluvial fans emanating from the McCoy Mountains. The MSEP solar site would be intermittently visible and large in apparent scale relative to the other KOPs due to shortened distance. Due to screening elements, much of the visual contrast would be difficult to perceive. Background mountains and foreground elements would remain dominant in the scene. Hazy conditions would further mute the facility contrast.

TABLE 4.19-3 (Continued)
VISUAL CONTRAST RATING SUMMARY

ID	Name	Form	Line	Color	Texture	Contrast Summary
KOP 6	Eastbound I-10	Weak	Weak	Weak	None	From eastbound I-10, travelers would be able to see the gen-tie line in southerly views as it parallels the highway in the distance. The presence of other transmission lines in the middleground would diminish slightly the contrast of the structures in the scene. For eastbound travelers, the increasing proximity of the McCoy Mountains in northerly views draws visual attention. Due to distance, the presence of other transmission facilities and a prominent visual feature in a different view direction, the MSEP gen-tie line would be seen but would not likely attract attention.
KOP 7	Westbound I-10	Weak	Weak	Weak	None	From westbound I-10, travelers would approach the MSEP gen-tie line crossing. Due to screening elements that include highway signs, woodland scrub trees and shrubs bordering the highway, travelers would likely notice the gen-tie crossing only briefly (i.e., less than a minute). The general presence of other transmission lines in the vicinity would diminish the contrast of the MSEP gen-tie line within the visual context of the highway corridor. While the gen tie line would be seen, it would not attract attention because other transmission lines cross the highway in other locations and foreground views of the poles and wire strings would be experienced very briefly.

and texture contrasts would be highly muted or unapparent. However, the large scale of the facility means that even from relatively distant viewpoints, such as KOPs 1, 2, 3, and 4, the MSEP solar field would create a visual contrast in color relative to the surrounding landscape, and the facility would create sharp edge contrasts that are straight and geometric, and uncharacteristic of the surrounding landscape. This is particularly true as the observer gains elevation relative to the MSEP site. For KOPs at the same or similar elevations, the low angle of view would greatly diminish the dominance and scale of the MSEP. This is due to perspective foreshortening, which reduces the apparent size of surfaces of areas or objects, when seen obliquely or at low viewing angles. The line contrasts from such viewpoints are less apparent because they are often coincident with the flat horizon line of the valley floor, although a moderate color contrast may still remain. As discussed in Section 4.19.1.3, the visual simulations (as well as the visual contrast ratings) were created assuming optimal atmospheric conditions.

During much of the year, the visual contrast of the facility would be further reduced because of diminished visibility caused by haze and dust, and (less frequently) by rain and clouds.

As documented in Appendix F, the MSEP would meet visual resource management objectives from all KOPs. For KOPs viewing landscapes rated VRM Class III, the degree of visual contrast would not exceed moderate, in keeping with the management objective. The visual impact of the facility from several of the KOPs would be noticed, and would possibly attract the attention of a casual observer, but would not be so severe as to dominate the visual character of the landscape. The only portion of the MSEP site that must meet a VRM Class II objective is the gen-tie line north of I-10 and south of the southern edge of the approved BSPP solar plant site. The visual contrast rating from KOP 7 (which views a small part of the gen-tie alignment north of I-10) demonstrates that the project would meet a VRM Class II management objective.

However, as travelers continue west on I-10, the presence of the gen-tie line may briefly result in nonconformance with VRM Class II management objectives. As gen-tie line monopoles and wire strings come into the foreground, and assuming that a 100-foot corridor would be cleared of vegetation to accommodate the gen-tie line, the degree of visual contrast in northerly or northwesterly views may briefly be moderate because the development could attract visual attention. In the westbound direction, the southern tip of the McCoy Mountains begins to come into middleground views. In the context of the flat Chuckwalla Valley, it is a visually prominent feature. As the southern tip of the mountain approaches, its colors, textures, and form become visible in greater detail, and vehicle passengers observing the landscape are likely to focus on the northwesterly view. These observers may be briefly distracted (i.e., a period of seconds) by the visual contrast created in foreground views of the gen-tie line corridor. VRM Class II allows for only weak visual contrasts in the landscape, therefore visual contrast caused by the gen-tie line and the cleared corridor from I-10 would briefly violate the applicable VRM objective.

Despite the size and scale of the MSEP as a whole, the presence of topographic screening, the relative distance of paved public roadways, and because the public mostly would experience views of the MSEP from low viewing angles, the degree of visual contrast within the landscape would generally be moderate or less. There are no KOPs from which the MSEP site would visually dominate the landscape character (i.e., have a strong visual contrast). As discussed above, the purpose of BLM’s visual contrast rating system is to reveal elements and features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a Proposed Action or activity. Even though the MSEP would meet visual resource management objectives from all KOPs, it would still have a moderate visual contrast that must be reduced to the greatest extent possible. Further, the visual contrast that would be caused by the gen-tie line in close proximity to I-10 must be reduced in an effort to meet VRM Class II objective in the landscape north of the highway. As reflected in the contrast ratings, because the MSEP would create the greatest contrast with the landscape character elements of color and line, mitigation measures should prioritize the reduction of color and line contrasts (e.g., minimize reflective surfaces, use compatible colors in facility surface treatments, feather vegetation edges, and take advantage of natural gaps in vegetation, etc.). Mitigation measures targeted in such a way will be the most effective in reducing the overall level of contrast caused by the MSEP.

In order to reduce the visual contrast caused by the design and layout of the MSEP, as proposed, during its operating lifetime, Mitigation Measure VIS-1, Project Design, Building, and Structural Materials, shall be implemented. Mitigation Measure VIS-1 contains a number of methods to reduce the level of contrast of the MSEP within the landscape. Most are focused on reducing color and/or line contrasts of MSEP facilities, and in particular, the off-site linear facilities. The measures to reduce line contrasts (such as feathering the edges of graded or cleared ground) would be most effective in reducing the visual contrast of the MSEP from relatively close-range views of the off-site linear corridors, or from vantage points that are sufficiently elevated to allow a viewer to discern the shape or outline of the MSEP. The layout of the MSEP would be such that its western edge would follow to some degree natural landscape patterns, since the western edge of the solar field has been designed to avoid major drainages, in keeping with APM HYDRO-1 (Protection of Jurisdictional Washes). The preservation of washes also preserves the natural vegetation lines in the landscape created by desert wash woodland. Measures to reduce color contrasts (including glare), in combination, are likely to reduce the visual contrast of the MSEP to varying degrees from nearly all vantage points. In particular, color treating cleared ground or graveled surfaces, taking advantage of natural clearances, and feathering edges is likely to reduce the visual contrast of the gen-tie line north of I-10 to weak, thereby resulting in conformance with the VRM Class II objective.

The ability of the measures to reduce the severity of visual impacts from the various KOPs analyzed above would be limited by the apparent size and scale of the MSEP as viewed from a distance. For vantage points that are distant from the MSEP and are at similar elevations (such as KOPs 1, 2, 4, and 5), Mitigation Measure VIS-1 would reduce the visual contrast slightly, but not to such a degree as to change the visual contrast rating for any of the elements rated in Table 4.19-3. However, for low numbers of dispersed recreational users (i.e., OHV users and backcountry hikers seeking solitude and unconfined recreation) who would experience either close-range or high-angle views of Project facilities (such as KOP 3), Mitigation Measure VIS-1 would be sufficient to reduce both color and line contrasts such that one or both of the contrast ratings could decrease from moderate to weak depending on site-specific viewing conditions. Overall, very few of the identified impacts would be altogether eliminated through application of the proposed measures; however, the contrast in color and texture would be noticeably reduced from several of the KOPs, as well as for OHV users who would experience close-range views of the MSEP solar field, and backcountry recreationalists who would experience high-angle views of the site from surrounding mountains and BLM wilderness.

With mitigation, and accounting for viewer specific conditions (such as view duration, viewer expectations, visual contrast, and view exposure), the MSEP would have a moderate adverse visual impact for motorists on Midland Road, users of the Midland LTVA, and residential communities on the southern edge of the mesa. Users of OHV routes on the Palo Verde Mesa and dispersed users of the surrounding mountains seeking solitude and unconfined recreation could experience a moderate adverse visual impact due to their increased sensitivity and their ability to gain access to high-angle, relatively proximal, and unencumbered views of the MSEP. Due to the short amount of time the gen-tie line would be visible in the foreground on I-10, and the implementation of Mitigation Measure VIS-1, the MSEP would have a minor adverse impact for travelers on I-10.

The following analysis discusses the visual effects of the three phases of the MSEP that have not been otherwise addressed above, as well as additional mitigation measure proposed to reduce visual contrasts.

Construction

During the construction period, earth-moving activities and construction materials, equipment, trucks, and parked vehicles, all could be visible on the site and along the gen-tie line ROW. Construction would occur over 46 consecutive months, during which a number of activities would take place, including large-scale vegetation removal, earthwork, as well as foundation and equipment installation. These construction activities could result in a degree of visual contrast within the landscape that is greater than the operations and maintenance phase discussed above for each KOP. This is because the color of the underlying earth (light tan) stands in greater contrast within the landscape than the dark grey/black, non-reflective surfaces of the solar panels that would be installed. However, the overall degree of visual impact would be somewhat lessened because the area covered by any one phase of construction would be smaller compared to full build-out of the MSEP, and the visual effects would be temporary.

Visual effects of construction could also include the generation of large quantities of airborne dust as well as nighttime construction lighting. The affected viewers would be motorists on I-10 (for construction of the gen-tie line), a moderate number of residences at the Mesa Bluffs and Fairway Villas Golf Community, visitors of the LTVA, and dispersed recreational users. Although the construction period is estimated to be close to 4 years, construction would be phased, so that it would not occur in any one place for the entire period. Further, construction activities would be conducted in a manner that minimizes dust emissions, including visible dust, as described in APMs AIR-1 and AIR-2. These measures would include limiting the speed of vehicles, surfacing construction access roads, and controlling wind erosion on soil stockpiles and exposed earth. When nighttime construction activities take place, illumination would be provided that meets state and federal worker safety regulations.

To the extent possible, the nighttime construction lighting would be directed downward or toward the area to be illuminated and would incorporate fixture hooding/shielding, as described in Chapter 2. Task-specific lighting would be used to the extent practical while complying with worker safety regulations. Disturbed areas that would not be needed during operation and maintenance of the MSEP would be revegetated according to Mitigation Measure VIS-2. Finally, earthwork and vegetation manipulation strategies in Mitigation Measure VIS-1 and VIS-2 would assist in toning down the contrast created in earth-moving and vegetation clearing. Adverse visual effects associated with generation of large quantities of airborne dust as well as nighttime lighting during the construction period activities at both the solar field and along linear routes would be reduced with the implementation of Mitigation Measures AIR-1, AIR-2, VIS-1, and VIS-2. The general visual contrast created by vegetation stripping and the presence of construction materials, equipment and partially constructed facilities would contribute to the visual contrast apparent in the landscape, which is addressed in the previous section from the perspective of seven KOPs.

Operation and Maintenance

During the operation of the Project, visual effects would be caused by the visible elements of the MSEP, as described above. The discussion below focuses on the visual effects that are not captured by visual simulations (nighttime lighting and reflected sunlight/glare), or that are unique to the operation and maintenance phase. In addition, because visual design measures may degrade over time, and in some circumstances, would require monitoring and maintenance, Mitigation Measure VIS-3 is included to ensure the visual mitigation measures are maintained properly over the life of the Project.

Light and Glare (all KOPs)

While the potential for glint or glare and nighttime lighting is a component of visual contrast, these issues are treated separately because the simulations used in the visual contrast rating process model the daytime visual change, and do not consider the effect of temporary glare.

Operational Lighting. MSEP operations would require on-site nighttime lighting for safety and security as discussed previously and in Chapter 2. These light sources would be concentrated in a relatively small 10-acre area on the southeastern corner of the MSEP site, or approximately 0.25 percent of the MSEP solar field as a whole. Under normal circumstances, the MSEP solar field would not be illuminated. While the level of light generated by the MSEP is expected to be low, especially from the most common public viewpoints, the MSEP would nevertheless be in an area with very few existing structures, and the use of uncontrolled or excessive lighting could be noticed by nearby motorists on Midland Road, residents of the Mesa Bluffs and Fairway Villa Golf Communities, and could affect the nighttime experience for users of the Midland LTVA.

As described in Mitigation Measure VIS-1, a lighting plan will be prepared that documents how lighting will be designed and installed to minimize night-sky impacts during facility construction and operations. The lighting plan will include numerous measures to prevent unnecessary use of lights, minimize light intensity, and prevent light spillage and reflectance to off-site areas. The implementation of these measures would minimize the amount of lighting potentially visible off-site to the extent feasible. While these measures would not totally eliminate the light visible by surrounding user groups, facility lighting would be minimized and controlled such that it would not be a nuisance and would not detract from the ability for affected viewers to enjoy their surroundings or view the night sky. Existing light sources described in Section 3.19, *Visual Resources*, such as the Blythe Airport and areas to the south, would remain the dominant and most noticeable existing sources of light within the affected viewsheds.

Glint and Glare from the MSEP facilities. Unlike large fields of parabolic mirrors, which have been known to produce fairly intense glint[4] and glare[5] at various times of the day, the use of PV technology is generally regarded as causing minimal glint and glare impacts. As described above, solar PV employs glass panels that are designed to minimize reflection and reflect as little as 2 percent of the incoming sunlight (FAA, 2010). Nevertheless, some glare is possible from the surface of the PV panels and other MSEP components (especially metallic components) that reflect light depending on panel orientation, sun angle, viewing angle, viewing distance, and other factors. For example, Sullivan et al. (2010 as cited in DOI, 2010) observed glare from a slightly elevated viewpoint at a distance of approximately 2 miles from panels and ancillary components at a partially built PV facility in Nevada. Even though the panels to be used would be a uniform black color, from certain angles and times of day, the panels may appear grey or silvery white due to glare (Sullivan et al., 2010 as cited in DOI, 2010).

4 A flash of light, also known as a specular reflection, produced as a direct reflection of the sun in the parabolic mirror surface.
5 A continuous source of excessive brightness, relative to ambient lighting, also known as diffused reflections.

Potentially affected observers would be travelers on I-10 (for the gen-tie lines) and Midland Road (for the solar field), users of nearby OHV routes, and visitors to the McCoy or Big Maria Mountains or the Midland LTVA. It is possible that back reflected light or light not absorbed by MSEP facilities could produce minor glare, particularly when the viewer is positioned in line with the sun. This glare could occur in any one place for several hours (e.g., a sunny afternoon) but is unlikely to be visually distracting or nuisance causing. It is possible, however, that glare produced by the MSEP would be more intense than any other natural or cultural features in an observer's perspective. Glare produced by diffuse reflections would increase the color contrast of the MSEP in the landscape, but would not be sufficiently intense or distracting as to increase any of the contrast ratings in Table 4.19-3 to "strong."

Several measures are available that would reduce the potential for and frequency of glare from the solar fields. Mitigation Measure VIS-1 would require reflective surfaces be painted or treated so long as it would not impair proper function of the equipment or structure, and would require the use of nonspecular conductors and nonreflective coatings along the gen-tie line. Further, Mitigation Measure VIS-3 would ensure that surface treatments are maintained during operation and maintenance so as to prevent degradation of colored or treated surfaces. These mitigation measures would reduce the extent of reflective surfaces within the solar fields and gen-tie line, but would not prevent spread reflections off the face of the solar panels. Therefore, the color contrast of the solar panels during certain times of the day when the viewer is positioned in line with the sun would momentarily increase, but not to such an extent as to result in a change in the severity of the contrast rating in Table 4.19-3.

Decommissioning

Decommissioning would remove MSEP-related structures and infrastructure so that affected lands could naturalize. However, until vegetative restoration is achieved, adverse visual impacts would be similar to those described in the construction-phase impacts, because large areas would be devoid of desert scrub vegetation. Visual effects from the proposed gen-tie lines would be likely to remain, however, since it seems likely that, once in use, such lines would remain in use regardless of whether the energy they transfer is generated by the MSEP or another project. Implementation of VIS-1 and VIS-4 would aid greatly in reducing the visual effects of decommissioning. VIS-4 would require the Decommissioning and Site Reclamation Plan to include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures. Further, VIS-4 would reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. It would require replacement of soil, brush, rocks, and natural debris over disturbed areas. Newly introduce plant species would be of a form, color, and texture that blends with the landscape. These measures would ensure the visual impacts of decommissioning are minor and short-term.

Impacts to Special Designations (Wilderness Areas)

Figures 3.19-2 and 3.16-1 show designated wilderness areas and areas of wilderness characteristics in the vicinity of the Proposed Action. While views of the MSEP would generally be from elevated viewpoints similar to KOP 3, the areas of the Big Maria Mountains Wilderness from which the MSEP could be seen would be located a greater distance away, somewhat diminishing the portion of views occupied by the MSEP.

The Palen-McCoy Wilderness is approximately 3 miles northwest of the MSEP site boundary. Approximately 1,698 acres or less that 1 percent of the Palen-McCoy Wilderness is within the MSEP viewshed. These areas are generally elevated with a favorable topographic orientation. Views from the Palen-McCoy Wilderness (and other locations on the eastern face of the McCoy Mountains) would be high-angle and relatively proximal to the Project and it is likely that the MSEP would result in a strong degree of contrast from these vantage points (i.e., it would demand attention, would not be overlooked, and would dominate the landscape). However, these vantage points are not appropriate as representative public viewpoints (KOPs) because as discussed in Section 4.19.1.2, visitorship to this wilderness area is very low and access to viewpoints are from scarcely traveled routes. In addition, the MSEP is unseen from the vast majority of wilderness land due to intervening mountain ranges (such as the McCoy and Little Maria Mountains). For these reasons, impacts would be moderate.

The Big Maria Mountains Wilderness and Rice Wilderness are located approximately 7 miles to the northeast, and 16 miles to the north of the MSEP site boundary, respectively. Approximately 5,556 acres or 12 percent of the Big Maria Mountains Wilderness and about 831 acres or 2 percent of the Rice Wilderness are within the MSEP viewshed. Users of these areas would be able to view the MSEP, but opportunities for solitude and unconfined recreation would not be greatly affected due to the small fraction of the wilderness area from which the MSEP could be seen and the distance of the MSEP from the wilderness area. Where visible, the MSEP area would constitute a small portion of the views, which would be open, unobstructed, and dominated by natural landscape features (e.g., mountain ranges, broad valleys, open sky). For these reasons, impacts would be minor.

The Little Chuckwalla Mountains Wilderness is located 14 miles to the southwest of the MSEP site boundary. Because of intervening topography, only the off-site linear facilities of the MSEP would be visible from the Little Chuckwalla Mountains Wilderness. At such great distances, the linear alignment would be barely noticeable and would only be visible from a small fraction of the total wilderness area. For these reasons, adverse effects would be minor.

4.19.4 Alternative 2: Reduced Acreage

4.19.4.1 Direct and Indirect Impacts

The direct and indirect impacts of the Reduced Acreage Alternative are similar or the same as the impacts of the Proposed Action, although the size of the facility and the duration of construction activities would be reduced. The area occupied by MSEP solar field would be reduced by approximately 50 percent, resulting in a reduction in the degree of visual change apparent from KOPs 1 through 5. The degree to which the visible extent of the MSEP under Alternative 2 would be reduced would depend on viewing relationships. Due to the low angle of view, a reduction in the disturbance area of Alternative 2 may be less perceptible from KOPs located east of the MSEP solar field (KOPs 1 and 2) than those located to the north and northeast (KOPs 3 through 5). Because the

MSEP solar field is viewed side-on from KOPs 1 and 2, eliminating its western half would have a minor effect on the extent of the horizon line occupied by the MSEP. On the other hand, the visible extent of the MSEP solar field would be noticeably reduced for viewpoints to the north (KOPs 4 and 5), and those that are sufficiently elevated to perceive the size and shape of the solar field (KOP 3). The visual contrast ratings presented in Table 4.19-3 would not change for KOPs 1 and 2, but would be reduced from moderate to weak for KOPs 3 and 4, and would be eliminated from KOP 5. For low numbers of dispersed recreational users in the surrounding mountains, the Alternative 2 would reduce the degree of visual contrast from strong to moderate levels because the apparent size of the facility would be cut in half. Because the location of the gen-tie line would not change, all impacts regarding views of the gen-tie line would be identical to those of the Proposed Action. In addition, because the size of the O&M area and the need for security lighting would remain the same under Alternative 2, impacts related to light and glare would be the same or similar compared to the Proposed Action. All mitigation measures identified for the Proposed Action would result in a similar degree of reduction in the apparent visual contrast caused by Alternative 2.

Construction

Because the construction duration under Alternative 2 would be reduced, the visual impacts that are unique to the construction phase (grading, fugitive dust, construction-related lighting, etc.) would be the same in type and intensity, but would be reduced in duration and geographic extent.

Operation and Maintenance

As discussed above, the visual impact of operation and maintenance would be reduced relative to Alternative 1, particularly from KOPs 3 through 5, and for dispersed recreational users in the surrounding wilderness.

Decommissioning

The visual impact of decommissioning activities for Alternative 2 would be similar or the same as the construction phase of this alternative.

4.19.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.19.5.1 Central Route

Direct and Indirect Impacts

The portion of the Central Route that deviates from the gen-tie line analyzed under Alternative 1 would be visible only from KOPs 1 and 2. In addition, the Central Route would cross I-10 in the same location as Alternative 1. Consequently, all other visual impacts discussed under Alternative 1 would be the same for Alternative 3. From KOPs 1 and 2, the gen-tie line would appear more distant and, therefore, would be even less noticeable. The visual contrast from KOPs 1 and 2 is predominantly caused by the MSEP solar field rather than the gen-tie route. Although it would be visible, it would be subordinate to other features in the view and have a minimal influence on the visual contrast of the Project compared to the solar field. Therefore, the visual impacts of construction, operation, maintenance, and decommissioning of Alternative 3 would be substantially the same as the impacts of Alternative 1.

4.19.5.2 Western Route

Direct and Indirect Impacts

The direct and indirect impacts for the Western Route would be the same as those of the Central Route, except that the Central Route would be located even further from KOPs 1 and 2, thereby reducing further the visibility of the gen-tie route. However, because MSEP solar field is the dominant factor in the visual contrast, the visual impacts of construction, operation, maintenance, and decommissioning of Alternative 3 would be substantially the same as Alternative 1.

4.19.6 Alternative 4: No Action Alternative

Under this Alternative, the visual appearance of the site would not change noticeably from existing conditions. The No Action Alternative would cause no change relative to baseline conditions and would not result in the visual impacts described for Alternative 1.

4.19.7 Cumulative Impacts

Impacts resulting from construction, operation, maintenance, and decommissioning of the MSEP could result in a cumulative effect on visual resources in combination with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for visual resources consists of the viewshed of the I-10 corridor (where visual impacts could be synergistic), and locations from which a viewer could see the Proposed Action along with views of other projects (where visual impacts could be additive). Potential cumulative effects on visual resources could occur during the MSEP's proposed 46-month construction period (e.g., from cumulative construction disturbances), during the 30-year term of the authorizations and permits for the Proposed Action (e.g., project contrast with the landscape, glint and glare), or result from closure and decommissioning (e.g., until restoration efforts return the landscape to its original condition). Cumulative visual impacts could occur as long as the MSEP contributes to visual changes to the landscape that are visible or perceived by the public, either within the same viewpoints, or as a noticeable element in a cumulative viewing experience (i.e., an OHV travel route, a drive on I-10, or a local road).

Existing conditions within the area of cumulative effects analysis reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3. Direct and indirect effects of the MSEP are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, projects such as the Blythe, enXco McCoy, Gypsum, Genesis, Rice, Palen, and Desert Sunlight solar power projects, as well as numerous solar projects proposed on lands under County jurisdiction are expected to result in synergistic visual impacts for travelers along I-10, as well as additive visual impacts to dispersed recreational users on BLM lands on the Palo Verde Mesa and local roads, such as Midland Road. The analysis of the proposed Project generally found that the visual contrast of the MSEP would not exceed moderate levels from any of the representative public viewpoints. The degree of visual contrast caused by the MSEP solar field as experienced from Midland Road, OHV routes and a residential community on the Palo Verde Mesa ranged from "none" to "moderate." The visual contrast from the eastern faces of the McCoy Mountains and a small fraction of the Palen-McCoy Wilderness would be "strong" but would have a moderate impact to the viewing public due to low visitorship and/or use. The visual contrast due to the gen-tie line experienced from I-10 would be briefly moderate at the gen-tie line crossing, and minor along other portions of I-10. Implementation of mitigation measures in Section 4.19.8 would bring the MSEP project into conformance with VRM objectives from all of the KOPs analyzed in Section 4.19.4.

The cumulative scenario for visual resource impacts, especially the viewshed impacts of utility-scale solar energy projects, has been evaluated in detail in the Final Solar PEIS issued in July 2012 (BLM and DOE, 2012). In that analysis, the specific solar technologies to be employed and the locations to be developed are not known precisely, but the visual impact analysis of the Riverside East Solar Energy Zone (SEZ) provides a useful approximation of the likely cumulative impact to be expected should all projects listed in Section 4.1 be developed. The projects in the cumulative scenario located on and adjacent to the Palo Verde Mesa as well as south of I-10 and west of Blythe are generally coincident with the SEZs analyzed in the Solar PEIS.

Because of the large size of the SEZ, the area's topography, and the general lack of screening vegetation, the viewshed of the Riverside East SEZ is enormous. Within 25 miles of the SEZ, utility scale solar energy projects theoretically could be visible within an area of more than 2,100,000 acres (DOI, 2010). The viewshed includes large portions of the mountain ranges surrounding the Chuckwalla Valley and some neighboring valleys, including Ward and Rice Valleys, and the Pinto Basin. The affected lands that are common to both the MSEP and the Riverside East SEZ include I-10 and sensitive visual resource areas including the Palen-McCoy Wilderness, the Big Maria Mountains Wilderness, and the Rice Wilderness. The MSEP's viewshed is wholly encompassed by the viewshed of the Riverside East SEZ. While no projects in the cumulative scenario would result in direct visual disturbance to landscapes within designated wilderness, due to their elevated position solar energy developments would be visible in part or in whole from significant areas of land within designated wilderness, as shown in Table 4.19-4.

TABLE 4.19-4
CUMULATIVE VIEWSHED IMPACTS ON DESIGNATED WILDERNESS AREAS

Designated Wilderness Area (WA)	MSEP viewshed within WA	Riverside East SEZ viewshed within WA (25-mile radius)	Percent of WA within SEZ viewshed	Percent of WA within MSEP viewshed
Big Maria Mountains (46,056 acres)	5,556 acres	8,873 acres	19 percent	12 percent
Palen-McCoy (224,414 acres)	1,698 acres	170,666 acres	76 percent	< 1 percent
Rice Valley (43,412 acres)	831 acres	35,773 acres	82 percent	2 percent

The main conclusion reached in the visual analysis of the SEZ is that visually complex, man-made industrial landscapes would contrast greatly with the surrounding generally naturally appearing lands. Large visual impacts on the SEZ and surrounding lands within the SEZ viewshed would be associated with solar energy development due to major modification of the character of the existing landscape. This conclusion indicates that the cumulative scenario would result in a visual impact that is inconsistent with the Interim VRM objectives that have been established in the MSEP area as described in Section 3.19.1.7 (VRM Class II and/or III). The analysis in the Solar PEIS also indicates that the most effective mitigation measures would be proper facility siting and layout, and that other mitigation measures addressing facility color and/or edge contrasts, due mostly to the size and scale of the foreseeable developments, would have a limited ability to appreciably reduce visual impacts from highly exposed areas.

In summary, the large-scale, closely spaced nature of projects in the cumulative scenario, in addition to the fact that some technologies, such as that proposed for the Rio Mesa Solar Project, would construct solar power towers approximately 760 feet tall, results in a cumulative scenario that would have major adverse impacts on the visual values in the visual resources cumulative geographic scope (BrightSource, 2011). Commonly employed visual mitigation measures, such as those proposed in this section, would slightly reduce the cumulative visual impacts, but not to such a degree as to avoid or substantially reduce the impacts to visual values of the region. The cumulative impact would be long-term, adverse and unavoidable. The following sections provides additional details on the type and severity of cumulative visual impacts that would be experienced from each of the KOPs, from I-10, and for dispersed recreational users in the surrounding wilderness.

4.19.7.1 Impacts on KOPs/Visual Contrast Ratings

In general, the addition of the cumulative projects to the visual simulations presented for KOPs 1 through 7 would increase the degree of visual contrast for affected viewers to moderate or strong levels. In the case of KOP 5, the KOP is located within the boundaries of a foreseeable project in the cumulative scenario; in other cases, the addition of foreseeable projects results in a doubling or tripling of the horizontal view extent taken up by renewable energy developments. From some KOPs, new developments in the cumulative scenario would not be contained within one view direction and would be visible from multiple directions. The estimated visual contrast created by the cumulative scenario from each of the KOPs discussed in Section 4.19.4 is shown in Table 4.19-5. In sum, the cumulative scenario would have adverse and unavoidable visual resource impacts from nearly all of the KOPs that could not be sufficiently mitigated with feasible mitigation measures.

4.19.7.2 Motorists on I-10

Visual changes as a result of other projects in the cumulative scenario, including the BSPP, the Blythe Airport Solar Project, Desert Quartzite, Palo Verde 2 (Sonoran West), Colorado River Substation Expansion, and a 21 MW PV facility proposed to the south of I-10 and the Blythe Airport (CUP03602); would be visible to travelers on I-10, who would also experience views of the MSEP gen-tie line. The combined effect of large-scale landscape alterations that would be visible along the length of I-10 within the CDCA Plan area could substantially degrade the visual character and the general scenic appeal of the landscape.

TABLE 4.19-5
ESTIMATED VISUAL CONTRAST OF CUMULATIVE SCENARIO

ID	Name	Visual Contrast of MSEP	Estimated Visual Contrast of the Cumulative Scenario	Contribution of the MSEP to the cumulative visual contrast
KOP 1	Fairway Villas Golf Community	None to weak	**Strong**: The Gypsum solar project and an unnamed county solar project would be located in the foreground to middleground and would dominate views of the valley floor. It would be difficult for a casual observer to overlook the visual changes because solar energy developments would be visible from multiple view directions. The extent of the horizon line occupied by more distant solar facilities (BSPP and EnXco) would approximately triple that taken up by the MSEP alone.	**Minor**: The strong visual contrast from KOP 1 would remain in the absence of the MSEP because other projects in the cumulative scenario are located in closer proximity and would contribute to the vast majority of the visual contrast.
KOP 2	Midland LTVA	None to moderate	**Strong**: The cumulative scenario would dominate the character of the landscape from this KOP for the same reasons described for KOP 1.	**Minor**: The MSEP's contribution to visual impacts would be minor for the same reasons described for KOP 1.
KOP 3	Foot of the Big Maria Mountains	Weak to moderate	**Strong**: From this elevated vantage point, nearly all solar energy developments proposed on the Palo Verde Mesa would be visible (roughly 33,500 acres). While foreground/proximal views of the valley floor would remain undisturbed from this perspective, solar energy developments in middleground and background views of the valley would dominate the visual character and could not be overlooked by a casual observer.	**Minor**: The strong visual contrast from KOP 3 would remain in spite of the presence of the MSEP. The MSEP would occupy approximately 12 percent of the land area (visible from this KOP) that would be developed by renewable energy.
KOP 4	BLM Kiosk at Midland and Arlington Mine Road	None to moderate	**Moderate**: From this KOP, foreground views would remain undisturbed, although substantially more Projects would be visible in distant views of the valley floor. Due to the position of the viewer relative to proposed developments, the visual changes would be restricted to distant views of the valley floor and appear as a narrow strip. The projects in the cumulative scenario together would attract the attention of a casual observer, but would not dominate the landscape character.	**Minor**: The MSEP's contribution to visual impacts would be minor for the same reasons described for KOP 1.
KOP 5	Open OHV Route No. 661085	None to weak	**Strong**: This viewpoint would be located within the proposed EnXco solar energy development. Middleground and background views of the valley floor would be fully removed due to view blockage. The EnXco would dominate the view from all directions	**Minor**: The MSEP's contribution to visual impacts would be minor because it is unlikely the viewer would see any other Project other than the EnXco Project (due to view blockage).
KOP 6	Eastbound I-10	None to weak	**Strong:** See section 4.19.7.2	**Minor**: see section 4.19.7.2
KOP 7	Westbound I-10	None to weak	**Strong:** See section 4.19.7.2	**Minor**: see section 4.19.7.2

Numerous existing cultural modifications are visible from the I-10 corridor, including transmission lines, pipelines, 4-wheel drive tracks, and widely scattered facilities and structures; however, the general character is of an unimpaired, isolated desert landscape. The cumulative scenario includes many large-scale solar plants whose scale, potential glare, and pervasiveness would adversely impact the continued existence of that general character. If all the cumulative projects included in Section 4.1 were to be implemented (which is considered unlikely), they would convert at least 70,438 acres within the I-10 corridor viewshed between roughly Desert Center and Blythe (approximately 50 miles) from an undeveloped desert viewshed to a more industrialized appearance (mostly with large solar array fields using both thermal and photovoltaic technologies).

In many cases, the apparent scale of the projects from motorists' perspective would be diminished greatly by favorable topographic relationships. The cumulative projects are at the same or similar elevation as the highway, and are reduced in prominence due to their distance from the highway and low angle of view. In many cases, the other projects in the cumulative scenario would blend in with the horizon line of the valley floor, and the rugged mountains would remain the dominant visual features in the landscape, although this is decreasingly the case further west toward Desert Center where I-10 is elevated relative to the proposed solar energy developments. Because the landscape is currently undeveloped and valued by visitors for its isolated and unspoiled condition, the addition of numerous new large-scale solar projects would substantially degrade the scenic experience for many travelers along I-10, due to the projects' industrial character and visual contrast. Mitigation measures are available that reduce the color contrast of structures, or the line contrast of vegetation clearing; but the measures reduce the contrast of certain features of the projects at various distances. Due to the size, extent and geographic dispersal of renewable energy projects in the cumulative scenario along I-10, mitigation measures would be insufficient to substantially reduce the visual impacts of the cumulative scenario. Travelers along I-10 between Desert Center and Blythe, assuming all projects in the cumulative scenario are approved and built, would have very few viewsheds offering an undisturbed desert landscape. For these reasons, the cumulative scenario would have a moderate to major (depending on visual sensitivity and visual exposure factors) adverse impact on the I-10 view corridor. Thus, the cumulative scenario would present an unavoidable and adverse impact for travelers along I-10 that could not be feasibly mitigated.

4.19.7.3 Dispersed Recreational Users in Surrounding Mountains

Dispersed recreational users in the Palen-McCoy and Big Maria Mountains Wilderness surrounding the MSEP—due to their elevated position and access to unencumbered, panoramic views of the valley below—could experience both additive and synergistic impacts in the cumulative scenario. The MSEP, along with other projects in the cumulative scenario, including the BSPP, Gypsum Solar, and enXco McCoy, would not result in direct visual alteration to BLM wilderness areas; but the scale and contrast created by numerous renewable energy projects would greatly alter views of the valley floor experienced by wilderness users (see Table 4.19-4). Unlike the impacts of the MSEP alone, which would occur within the context of an undisturbed desert landscape and would be somewhat diminished in importance relative to vast and expansive views, the extent of development on the valley floor under the cumulative scenario would be great enough that it would dominate the landscape character and would not be confined within a single view (i.e., new developments would be visible in multiple view direction). Existing cultural modifications on the valley floor are largely limited to linear alignments (e.g., roads and transmission lines), or other structures that are diminished in importance due to the considerable distance from which they are viewed. However, the cumulative scenario presents numerous large-scale renewable energy projects that would be readily apparent to most wilderness users. The MSEP, in combination with other projects, would make the valleys surrounding the Palen-McCoy, Big Maria Mountains, and Rice Wilderness appear increasingly industrialized, and could substantially diminish the remote and isolated character of the landscape and have a substantial adverse impact on the wilderness character. While use levels in the mountains and wilderness surrounding the MSEP are generally low, the remote and isolated character of the landscape is highly valued by its users, and could represent the primary attraction.

Available mitigation measures could not feasibly reduce the scale and contrast created by development of the cumulative projects, especially from elevated viewpoints. Even with mitigation, visitors to the higher elevation wilderness in the region would be exposed to large-scale renewable energy developments on valley floors from multiple locations and in several view directions, causing a substantial adverse impact on wilderness values. Thus, the cumulative scenario presents an unavoidable and adverse impact for dispersed recreational users in surrounding, higher-elevation wilderness.

4.19.8 Mitigation Measures

Project design elements proposed by the Applicant would avoid or reduce potential visual resource-related impacts that otherwise could result from the Project or any of the action alternatives (see Table 2-7 in Chapter 2, *Proposed Action and Alternatives*). For example, APM AIR-1 would address construction-generated air quality impacts (see Section 4.2, *Air Resources*), APM AIR-2 would address operation- and maintenance related air emissions (see Section 4.2, *Air Resources*), and APM HYDRO-1 would protect jurisdictional washes (see Section 4.20, *Water Resources*). These measures would be implemented like other elements of the Project, and are not “mitigation measures” as the term is used in the NEPA context.

In accordance with CEQ guidance and BLM NEPA Handbook §6.8.4, reasonable, relevant mitigation measures that could improve a proposed project can be applied to reduce or eliminate adverse impacts whether or not the impacts are “significant” as that term is defined by NEPA. Project impacts could be reduced by the implementation of Mitigation Measures VIS-1 through VIS-4, which are set forth below.

VIS-1: Project Design, Building and Structural Materials. Visual design elements shall be integrated into the construction plans, details, shop drawings and specifications; these shall include, but not be limited to, grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural plans. Visual design elements within the plans shall be measureable and monitored while under construction, while operational, and when decommissioned. The plans shall include a monitoring and compliance plan that establishes the monitoring requirements and thresholds for acceptable performance. A careful study of the site shall be performed to identify appropriate colors and textures for materials; both summer and winter appearance shall be considered as well as seasons of peak visitor use (September 15 to April 15). Visual design elements to be integrated into construction plans, details, shop drawings and specifications must at a minimum include:

1. Vegetation and ground disturbance associated with access road construction, gen-tie and distribution line installations, and the perimeter access road shall be minimized and take advantage of existing clearings wherever feasible.

2. Along all off-site access roads, all off-site gen-tie and distribution line corridors, and all internal access roads 16 feet or wider, graveled surfaces, areas to be permanently cleared of vegetation, and (if applicable) cut slopes shall be treated with rock stains or other color treatment appropriate with the surrounding landscape.

3. Openings in vegetation for facilities, structures, roads, and gen-tie line monopoles (and/or H-frames), shall be feathered and shaped to repeat the size, shape, and characteristics of naturally occurring openings.

4. The backs or non-energy gathering side of the solar panels shall be color-treated to reduce visual contrast with the landscape setting. Since not all of the panels are visible outside the project footprint, the exact number and location of panels that will require color treatment shall be determined prior to installation.

5. Security fencing shall be coated with black poly-vinyl or other visual contrast reducing color.

6. Materials, coatings, or paints having little or no reflectivity shall be used whenever possible.

7. Grouped structures, including the water tanks and prefabricated buildings, shall be painted the same color to reduce visual complexity and color contrast.

8. The gen-tie line and the distribution line shall utilize nonspecular conductors and nonreflective coatings on insulators.

9. The choice of color treatments shall be based on the appearance at typical viewing distances and consider the entire landscape around the proposed development as it would be viewed from publically accessible locations. Appropriate colors for smooth surfaces often need to be two to three shades darker than the background color to compensate for shadows that darken most textured natural surfaces. Choice of colors shall be made from the BLM Standard Environmental Color Chart CC-001 in consultation with a BLM landscape architect or other designated visual resource specialist.

10. A lighting plan shall be prepared that documents how lighting will be designed and installed to minimize night-sky impacts during facility construction and operations. Lighting for facilities should not exceed the minimum number of lights and brightness required for safety and security, and should not cause excessive reflected glare. Low-pressure sodium light sources should be used to reduce light pollution. Full cut-off luminaires should be used to minimize uplighting. Lights should be directed downward or toward the area to be illuminated. Light fixtures should not spill light beyond the project boundary. Lights in highly illuminated areas that are not occupied on a continuous basis should have switches, timer switches, or motion detectors so that the lights operate only

when the area is occupied. Where feasible, vehicle mounted lights should be used for night maintenance activities. Wherever feasible, consistent with safety and security, lighting should be kept off when not in use. The lighting plan should include a process for promptly addressing and mitigating complaints about potential lighting impacts.

VIS-2: Construction Phase Visual Mitigation. A pre-construction meeting with BLM landscape architects or other designated visual/scenic resource specialists shall be held before construction begins to coordinate on the VRM mitigation strategy and confirm the compliance-checking schedule and procedures. Final design and construction documents will be reviewed for completeness with regard to the visual mitigation elements, assuring that requirements and commitments are adequately addressed. The construction documents shall include, but not be limited to grading, drainage, revegetation, vegetation clearing, and feathering plans, and must demonstrate how VRM objectives will be met, monitored, and measured for conformance. Specific measures shall include the following:

1. The Applicant shall reduce visual impacts during construction by clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving existing, native vegetation to the extent feasible; utilizing undulating surface-disturbance edges; stripping, salvaging, and replacing topsoil; using contoured grading; controlling erosion; using dust suppression techniques; and restoring exposed soils to their original contour and vegetation.

2. Visual impact mitigation objectives and activities shall be discussed with equipment operators before construction activities begin.

3. Existing rocks, vegetation, and drainage patterns shall be preserved to the extent feasible.

4. Brush-beating or mowing or using protective surface matting rather than removing vegetation shall be employed where feasible.

5. Slash from vegetation removal shall be mulched and spread to cover fresh soil disturbances as part of the revegetation plan. Slash piles shall not be left in sensitive viewing areas.

6. The visual color contrast of graveled surfaces shall be reduced with approved color treatment practices.

7. No paint or permanent discoloring agents shall be applied to rocks or vegetation to indicate surveyor construction activity limits.

8. All stakes and flagging shall be removed from the construction area and disposed of in an approved facility.

VIS-3: Operation and Maintenance Phase Visual Mitigation. Terms and conditions for VRM mitigation compliance should be maintained and monitored for compliance with visual objectives, adaptive management adjustments, and modifications as necessary and approved by the BLM landscape architect or other designated visual/scenic resource specialist. Minimum measures are as follows:

1. The Applicant shall maintain revegetated surfaces until a self sustaining stand of vegetation is re-established and visually adapted to the undisturbed surrounding vegetation. No new

disturbance shall be created during operations without completion of a VRM analysis and approval by the AO.

2. Interim restoration shall be undertaken during the operating life of the Project as soon as possible after disturbances.

3. Painted facilities shall be kept in good repair and repainted when color fades or flakes.

4. Color-treated solar panel backs/supports shall be kept in good repair, and retreated when color fades and/or flakes.

VIS-4: Decommissioning and Site Reclamation Plan. A Decommissioning and Site Reclamation Plan, covering visual impact mitigation measures, shall be in place prior to construction, and reclamation activities should be undertaken as soon as possible after disturbances occur and be maintained throughout the life of the Project. The following decommissioning/reclamation activities/practices shall be implemented to partially mitigate visual impacts associated with solar energy development, where feasible:

1. Pre-development visual conditions, and the B-Quality scenery (north of I-10), and the C-Quality scenery (south of I-10), and integrity shall be reviewed, and the visual elements of form, line, color, and texture shall be restored to pre-development visual compatibility or to that of the surrounding landscape setting conditions, whichever achieves the better visual quality and most ecologically sound outcome.

2. A Decommissioning and Site Reclamation Plan shall be developed, approved by the BLM, and implemented. The plan shall require that all aboveground and near-ground structures be removed. Some structures shall be removed only to a level below the ground surface that will allow reclamation/restoration. Topsoil from all decommissioning activities shall be salvaged and reapplied during final reclamation. The plan shall include provisions for monitoring and determining compliance with the Project's visual mitigation and reclamation objectives.

3. Soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas shall be contoured to approximate naturally occurring slopes, thereby avoiding form and line contrasts with the existing landscapes. The Applicant shall contour to a rough texture (i.e., use large rocks/boulders, grade uneven surfaces, and/or vegetation mulches/debris) in order to trap seed and to discourage off-road travel, thereby reducing associated visual impacts.

4. A combination of seeding, planting of nursery stock, transplanting of local vegetation within the proposed disturbance areas, and staging of decommissioning activities enabling direct transplanting shall be utilized. Where feasible, native vegetation shall be used for revegetating to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape.

5. Stockpiled topsoil shall be reapplied to disturbed areas, and the areas shall be revegetated by using a mix of native species selected for visual compatibility with existing vegetation, where applicable, or by using a mix of native and non-native species if necessary to ensure successful revegetation. Gravel and other surface treatments shall be removed or buried.

6. Rocks, brush, and vegetal debris shall be restored whenever possible to approximate pre-existing visual conditions.

7. Edges of revegetated areas shall be feathered to reduce form and line contrasts with the existing landscapes.

8. A decommissioning VRM Monitoring and Compliance Plan shall be prepared by the Applicant and approved by the BLM that establishes the schedule and terms for monitoring and the conditions and methods of measurement for determining compliance.

4.19.9 Residual Impacts after Mitigation Incorporated

The implementation of Mitigation Measures VIS-1 through VIS-4 would reduce, but not eliminate, adverse cumulative impacts to KOPs, the I-10 corridor, and viewsheds of designated wilderness would remain. These residual impacts of the Project and alternatives would be unavoidable.

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4.20 Water Resources

4.20.1 Methodology for Analysis

This analysis of potential impacts of the Proposed Action and Alternatives on Water Resources, including hydrology and water quality, is based on the independent review by the BLM and its environmental consultant of technical studies including the following, which were provided by the Applicant:

1. AECOM, 2011a. *McCoy Solar Energy Project Pre/Post-Development Hydrology Report, McCoy Solar Energy Project, Riverside County, CA* (November, 2011).

2. AECOM, 2011b. Assessment of Proposed Groundwater Use – Results of Numerical Groundwater Modeling, McCoy Solar Energy Project, Palo Verde Mesa, Riverside County, CA.

3. Tetra Tech EC, Inc., 2011a. McCoy Solar Energy Project Jurisdictional Delineation Report for Regulated Waters of the State of California, Riverside County, California. (December 6, 2011).

4.20.2 Applicant Proposed Measures

The following APM was developed by the Applicant to address potential effects on water resources. The impact analysis assumes that the APM would be applied as part of the Project prior to implementing mitigation measures identified later in this section.

HYDRO-1: To address impacts to state jurisdictional washes:

a. The Project will be designed to ensure that post-development downstream hydrology will remain essentially the current downstream hydrology.

b. The final locations of poles and spur roads associated with the linear facilities will be designed to be flexible so that drainages that cross the linear corridor will be avoided to the extent feasible.

c. The Applicant proposes the following mitigation ratios to be used for the state jurisdictional waters that will be impacted by the Project:

SOLAR PLANT SITE

Vegetation Community/Land Cover	Permanent Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres		
	Unit 1	Unit 2		Unit 1	Unit 2	Total
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0	1.5	3:1	0	4.5	4.5
Mesquite Bosque	0	0	3:1	0	0	0
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	2.8	38.1	1.5:1	4.2	57.2	61.4

SOLAR PLANT SITE (Continued)

Vegetation Community/Land Cover	Permanent Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres		
	Unit 1	Unit 2		Unit 1	Unit 2	Total
Ephemeral "Riparian" Drainages (cont.)						
Vegetated Ephemeral Channels (Vegetated with No Trees)	47.3	50.4	1:1	47.3	50.4	97.7
Unvegetated (approximately less than or equal to 5% cover)	10.2	15.1	1:1	10.2	15.1	25.3
Subtotal Ephemeral "Riparian" Drainages	**60.3**	**105.1**	-	**61.7**	**127.2**	**188.9**
Upland Vegetation						
Sonoran Creosote Bush Scrub	2198.7	2072.9	1:1	2198.7	2072.9	4271.6
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	0	0	3:1	0	0	0
Subtotal Upland Vegetation	**2198.7**	**2072.9**		**2198.7**	**2072.9**	**4271.6**
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0	0	0	0
Developed (No Vegetation)	0	0	0	0	0	0
Subtotal Other Cover Types	**0**	**0**	-	0	0	0
Subtotals for Solar Plant Site	**2,259**	**2,178**	**-**	**2260.4**	**2200.1**	**4460.5**
	4,437					

LINEAR FACILITIES

Vegetation Community/ Land Cover	Gen-tie and Access Rd Impacts[1] (acres)		Distribution Line Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres
	Temporary	Permanent	Temporary	Permanent		
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0.5	0.7	0.1	0.8	3:1	6.3
Mesquite Bosque	0.2	0.2	0	0	3:1	1.2
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	0.0	0.0	0	0	1.5:1	0
Vegetated Ephemeral Channels (Vegetated with No Trees)	0.1	0.1	0	0	1:1	0.2
Unvegetated (approximately less than or equal to 5% cover)	0.2	0.1	0	0	1:1	0.3
Upland Vegetation						
Sonoran Creosote Bush Scrub	9.8	15.0	1.5	2.6	1:1	28.9

LINEAR FACILITIES (Continued)

Vegetation Community/ Land Cover	Gen-tie and Access Rd Impacts[1] (acres)		Distribution Line Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres
	Temporary	Permanent	Temporary	Permanent		
Upland Vegetation (cont.)						
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	19.0	19.0	0	0	3:1	114
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0.3	2	0	0
Developed (No Vegetation)	14.5	21.8	0	0	0	0
Subtotal for Linear Facilities	**44.3**	**56.9**	**1.9**	**5.4**	**-**	**150.9**
Grand Total (Solar Plant Site and Linear Facilities)	**4545.5**				**-**	**4611.4**
Grand Total without Developed Area[2]	**4509.2**				**-**	**4575.1**

1 Includes impacts associated with poles, spur roads, gen-tie maintenance road, pull sites, laydown yard, and the main access road.
2 The developed area refers to a portion of the main access road.

4.20.3 Alternative 1: Proposed Action

4.20.3.1 Direct and Indirect Impacts

Construction

Some impacts related to ground disturbance, such as those relating to surface water and drainage patterns and flood hazard areas, would begin during the construction phase and continue throughout the operation and maintenance phase, and are therefore described below under *Operation and Maintenance*. Where appropriate, a distinction is made between temporary impacts, which would occur during construction only, and long-term impacts, which would occur during both phases.

Groundwater Supply and Recharge

Groundwater withdrawals would occur during construction. A model was completed in order to evaluate the combined effects of pumping associated with construction and operation. Results indicated that the model-predicted drawdown outside of the solar field boundary would be less than 0.1 foot at the end of construction. Additionally, potential effects of construction withdrawals on PVID facilities were minimal, resulting in a minor change in PVID drain mass balance of about 0.09 AF. Because the model considered the construction and operation periods together, the results for both phases and described in more detail under *Operation and Maintenance.*

Water Quality

Construction of the MSEP would require the use of heavy machinery for vegetation grubbing, grading, and installation of roads, pipelines, generation facilities, transmission facilities, administration buildings, the solar field, and other facilities as discussed previously. Construction of these facilities would involve the use of bulldozers, graders, semi-trucks, and various other heavy machinery, and would involve changes to on-site topography. These activities would potentially loosen existing surface soils and sediments, increasing the potential for erosion during storm events. Additionally, the use of construction equipment may involve the accidental release of fuel, oils, brake dust, lubricants, antifreeze, and other potentially hazardous substances at the construction site. These water quality pollutants could become entrained in surface water during storm events, and/or be infiltrated into groundwater and the underlying aquifer, resulting in the degradation of water quality. According to preliminary discussions with the Colorado River RWQCB, Project construction is not anticipated to require acquisition of coverage under the NPDES General Permit for Construction Activities. Implementation of Mitigation Measure WATER-1, which requires implementation of a SWPPP, would reduce the potential water quality degradation of stormwater emanating from the MSEP site.

Flooding

In the event that a major storm event occurs during construction of the MSEP, unanticipated flooding could occur on site. Potential for damage to facilities due to on-site flooding would be exacerbated during the construction period. This is because a major flood event could occur at any time, including prior to the completion of the proposed stormwater management facilities on site. Therefore, unless construction practices and procedures are carefully managed, construction period flooding could result in damages to on site facilities, interference with the construction process, and potential exposure of employees to flood conditions. To minimize potential for construction period flooding to affect on site facilities, implementation of Mitigation Measure WATER-6 would be required.

Operation and Maintenance

Groundwater Supply and Recharge

The impact assessment for groundwater was performed based on the results of a numerical groundwater model (Palo Verde Groundwater Model) that was previously developed for the BSPP, which is located immediately south of the MSEP. The model encompasses the entirety of the Palo Verde Valley inclusive of both the PVMGB and the PVVGB; these basins considered together are hereafter referred to as the PVGB. The Palo Verde Groundwater Model was modified to accommodate the change in location of the proposed water supply wells. Model runs and associated documentation were completed by AECOM (2011a), in order to predict:

1. The effects from MSEP-only pumping during construction and operation, on groundwater supply wells on the Palo Verde Mesa, and how pumping might affect PVGB storage;

2. The cumulative effects of all proposed projects in the Palo Verde Valley on water levels and groundwater basin storage (results from this portion of the evaluation are considered under the subsequent discussion of cumulative impacts); and

3. To what extent the MSEP could cause a change in flux of surface water in PVID drains into underlying groundwater in the floodplain.

The Palo Verde Groundwater Model was constructed as a single-layer (two dimensional) numerical groundwater flow model in MODFLOW2000, with a domain that encompassed the entire Palo Verde Valley, inclusive of the mesa and floodplain. The base of the model was established at the bottom of the younger and older Colorado River alluvium, since these are the productive aquifers in the valley. A variety of boundary conditions were employed to simulate inflow and outflow of water from the model following the basin water balance. The model was calibrated to steady-state conditions and average measured water levels from wells on both the mesa and floodplain from 1980 to 2009. The model also used the average measured discharge data from the PVID drains as a measure of model calibration. Additional details regarding model design can be found in the Pre-/Post-Development Hydrology Report (AECOM, 2011a).

The Palo Verde Groundwater Model was updated to reflect the anticipated pumping scheme for the MSEP, and model grid spacing was updated accordingly. Two wells, a north well and a south well, were placed in the eastern half of the solar plant boundary and simulated to draw water from depths of approximately 400 to 500 feet bgs. The model assumed pumping volumes of a total of 750 AF over a 3-year construction period (160 gpm),[1] and 30 AFY (18 gpm)[2] over a period of 30 years during operation. Three pumping scenarios were modeled, each resulting in a different proportion of pumping from the northern and southern wells. The results of these scenarios are shown in Table 4.20-1.

TABLE 4.20-1
MODELED PUMPING SCENARIOS

Model Simulation	Construction Supply	Operational Supply
Scenario A	Northern well – 80 gpm Southern well – 80 gpm	Northern well – 18 gpm Southern well – off
Scenario B	Northern well – 160 gpm Southern well – off	Northern well – 18 gpm Southern well – off
Scenario C	Northern well – off Southern well – 160 gpm	Northern well – off Southern well – 160 gpm

SOURCE: AECOM, 2011a

Model results for MSEP pumping, during construction and operation are shown in Figures 4.20-1 to 4.20-3, for each of the scenarios shown in Table 4.20-2. As shown on the figures, regardless of the well configuration or associated pumping schedule, the influence from MSEP pumping would be minimal. The model predicted that drawdown outside of the solar plant boundary would be less

1 After modeling was completed, the anticipated construction period increased to 46 months (see Chapter 2), but the total anticipated water consumption did not change. A total of 750 AF pumped over 46 months results in a pumping rate of approximately 120 gpm. For consistency with the modeling result and to use a conservative estimate of construction-related water pumping volumes, this section uses the 160 gpm pumping rate.

2 After modeling was completed, the anticipated operation period water consumption increased to a maximum of 45 AFY, resulting in a pumping rate of approximately 28 gpm. This change is reflected in the impact analysis provided. As discussed in Chapter 2, operation period water use would be up to 1,350 AF over the lifetime of the MSEP (45 AFY x 30-year lifetime), for a total MSEP related water use of 2,100 AF.

than 0.1 foot, both at the end of construction and at the end of operational pumping. As would be anticipated, the construction pumping produced a larger drawdown at the pumping well and correspondingly larger radius of influence. In general, the predicted cones of depression were similar among the three scenarios.

In no scenario did the model predict that the drawdown would extend beyond the PVMGB boundary into the PVVGB. This is intuitive given the low pumping rates of 160 gpm for construction and 18 gpm for operation, and also indicates that water from pumping largely comes from a combination of storage on the mesa, recharge in the McCoy Wash, and possibly minor underflow from Parker Valley to the PVMGB via the northern tip of the PVVGB. The proposed pumping would result in drawdowns of less than 1 foot at the nearest water supply wells. This analysis acknowledges that the potential maximum water use rate would be up to approximately 450 AF greater than the modeled scenario over the lifetime of the MSEP. This represents an approximately 27 percent increase in total water use, beyond the modeled scenario. However, given the minimal anticipated effect of the proposed pumping, as shown in Figures 4.20-1 to 4.20-3, even a 27 percent increase in pumping intensity is expected to result in only minimal drawdown effects, with less than 1 foot of drawdown anticipated at the nearest water supply wells. The change in groundwater basin storage as a result of MSEP pumping is similarly minor. The proposed water supply (1,680 to 2,100 AF) represents approximately 0.02 to 0.03 percent of the estimated 6.84 million AF in storage in the PVGB. Therefore, the proposed pumping regimes are not anticipated to result in a significant drawdown of groundwater levels, or a significant reduction of total basin storage.

With respect to effects on PVID drains, model results indicate that there would be a very small change in the PVID drain mass balance between the non-pumping and pumping condition at the end of construction of 0.09 AF and a total change of about -128 AF at the end of the operation and maintenance period. The total change represents variance of -0.001 percent of the modeled throughput in the PVID drains over the 33 year combined construction, operation, and maintenance period (12.8 million AF) and about 8 percent of the total MSEP water use. The small percentage of the total amount of water being pumped for the Project (1,680 to 2,100 AF) indicates that most of the groundwater for pumping is coming from outside of the PVVGB, and thus outside the area where PVID facilities are located. It is important to note that this small of a change could not be reliably measured in the PVID drains and thus the model prediction cannot be verified. Further, it is also important to note that it is likely that this prediction is a function of the overall simplicity and limitations of the two-dimensional groundwater model and steady-state calibration, rather than a reflection of likely processes, given the very low proposed pumping volume. The change is very small in relationship to the overall PVID drain throughput in the model, and as such should be considered within the error of the model to reliably predict the change in mass flux from the drains.

Installation of new impervious surfaces can in some cases result in reductions in ground surface infiltration capacity, potentially causing reductions in net groundwater recharge. As discussed in greater detail below (see subsequent discussion of stormwater flows), the MSEP would result in the installation of up to approximately 46.9 acres of new impervious surfaces, including 7.9 acres associated with the proposed solar field, and up to 39 acres associated with the proposed gen-tie line access road and other related facilities. Infiltration of stormwater would be prevented from occurring within these areas. However, the sandy desert soils located on site have generally high infiltration capacity. Additionally, areas surrounding the MSEP site would not be affected, and would remain pervious. Therefore, the potential effects of the proposed impervious surfaces on site would be minimal in comparison to the overall infiltration capacity of the MSEP site and surrounding areas. Within the solar field, the proposed panels are not expected to interfere with stormwater infiltration: rainfall incident on the panels would fall to the ground, which would remain pervious, and be permitted to infiltrate.

Any potential off-site impacts to nearby wells (i.e., decline in water table elevation or water quality) deemed to have been caused or exacerbated by Project activities would be addressed by Mitigation Measure WATER-7.

Surface Water and Drainage Patterns

The MSEP would be installed in an area that presently is drained primarily by sheet flow and desert washes. Low-frequency, high-intensity monsoonal storms in the region can result in high volumes of stormwater flow within the vicinity of the MSEP site, which can cause high volumes of surface runoff to occur in the vicinity of the Project area. Although on-site grading would be minimized, and major features of existing on-site drainages would be preserved, the installation of proposed facilities, including roads, fencing, and solar arrays, could interfere with existing drainage patterns on-site. These changes could result in altered hydrology on site or downstream, thereby causing increases in erosion and sedimentation. The following discussion reviews potential changes that could result in increased erosion and sedimentation at the solar field and associated appurtenances, as well as the gen-tie line.

Solar Field. Potential changes in hydrology at the main MSEP site were evaluated using a series of modeled hydrology/flow scenarios. Expanding on a prior hydrologic modeling study completed by Tetra Tech (2011b, as cited in AECOM, 2011a), 2-foot contour interval LIDAR topographic data and updated precipitation information became available. AECOM (2011a) utilized these updated data sources to develop hydrologic and hydraulic models that provide refined estimates of pre- and post-development surface water drainage characteristics at the MSEP site and vicinity. AECOM developed a HEC-HMS hydrologic model to simulate precipitation-induced runoff from tributary drainage basins up-slope of the MSEP site, including a total land surface area of 3,120 acres within the HEC-HMS model domain. Results from the hydrologic model were used as inputs (inflow hydrographs) to a FLO-2D hydraulic model, developed to simulate pre/post-development drainage conditions at and down-slope of the MSEP site.

Upstream hydrology relevant to the MSEP site includes surface water flow from five tributary basins originating in the McCoy Mountains to the west of the site. These drainage basins were modeled individually for the 10- and 100-year (24-hour duration) hydrologic events using HEC-HMS. Outflow hydrographs resulting from both storm events were generated for each of the five tributary basins, and then used to define the inflow contributions along the western FLO-2D model boundary. The flow generated up-slope of the MSEP solar plant site would not change as a result of the proposed development; therefore, the same inflow hydrographs were used in all model scenarios (AECOM, 2011a).

To quantify potential changes in flow characteristics at the MSEP site and its vicinity, a separate FLO-2D hydraulic model was developed (AECOM, 2011a). The model used output from the HEC-HMS model as inputs. Drainage conditions were simulated for a 120-hour period for the 10- and 100-year (24-hour duration) hydrologic events. Pre-development site conditions were modeled based on estimates of existing ground surface characteristics, and were used as a basis for comparison with subsequent results from post-development model scenarios. Six flow analysis cross-sections (XS-1 through XS-6) were established within the FLO-2D model, to quantify flows along the downstream portions of the MSEP site. Figure 3.20-2 shows the model configurations utilized for the HEC-HMS and the FLO-2D models, including the location of cross-sections.

Model results indicate that pre-development flow patterns on the site generally trend from west to east with a slight crescent pattern across the site. The crescent is described by a minor change in flow direction from northeast at the western MSEP site boundary to southeast at the eastern MSEP solar plant site boundary. Post-development flow patterns on the MSEP solar plant site are generally similar to those shown for the pre-development conditions. Slight changes are noted at the perimeter locations where the proposed fencing and perimeter road would be located. Tables 4.20-2 and 4.20-3 provide a summary of peak flow rate and total outflow volume, respectively, at the six flow analysis cross-sections shown in Figure 3.20-2, for the 10- and 100-year storm events. These flow analysis cross-sections characterize flows exiting the MSEP solar plant site.

TABLE 4.20-2
MODELED PEAK FLOW RATE AT CROSS-SECTIONS, PRE-DEVELOPMENT, POST-DEVELOPMENT, AND NET CHANGE (CFS)

Cross-Section No.	10-Year Storm Event			100-Year Storm Event		
	Pre-Flow	Post-Flow	Change	Pre-Flow	Post-Flow	Change
XS-1	118	126	8	718	813	95
XS-2	103	112	9	594	679	85
XS-3	124	150	26	782	895	113
XS-4	292	361	69	1918	2155	237
XS-5	35	37	2	348	353	5
XS-6	121	139	18	1083	1082	-1

SOURCE: AECOM, 2011a

TABLE 4.20-3
MODELED OUTFLOW VOLUMES AT CROSS-SECTIONS, PRE-DEVELOPMENT, POST-DEVELOPMENT, AND NET CHANGE (AF)

Cross-Section No.	10-Year Storm Event			100-Year Storm Event		
	Pre-Vol.	Post-Vol.	Change	Pre-Vol.	Post-Vol.	Change
XS-1	271	287	16	803	831	28
XS-2	266	291	25	799	838	39
XS-3	329	368	39	1020	1079	59
XS-4	706	797	91	2196	2317	121
XS-5	58	59	1	297	299	2
XS-6	329	344	15	1113	1127	14

SOURCE: AECOM, 2011a

As shown in Tables 4.20-2 and 4.20-3, increased peak flow rates and outflow volumes from the southeast portion of the MSEP site are anticipated as a result of site development (XS-1 and XS-2). Increases to peak flow rate and total outflow volume resulting from MSEP site development are generally less than 10 percent. However, results indicate an increase in flow of 14 percent at XS-2 and XS-3 for a 100-year event. During a 10-year event, a modeled increase of 21 percent was observed for XS-3, and a 24 percent increase was observed for XS-4. These changes are primarily attributable to flow intercepted by the perimeter road and fencing along the western, northern, and southern site boundaries, which has the effect of diverting flow toward the southeast corner of the site. This phenomenon is also further evidenced by the lesser increase or reduction of outflow from XS-5 and XS-6. Reduction in surface roughness along the roads has the effect of decreasing the time of concentration, thus generally increasing the magnitude of the peak flow rate downstream. Additionally, use of chain link fences can result in the entrapment of debris, which can result in localized backup of floodwaters. Increases in peak flow rate and total outflow volume at certain cross-sections are generally balanced by decreases in these metrics at other cross-sections. This phenomenon is interpreted to be the result of rerouting of flow rather than changes to the overall cumulative value of these metrics.

Figures 4.20-4 and 4.20-5 provide maps of model output, showing net change in flow velocity due to MSEP implementation during 10-year and 100-year events, respectively. Figures 4.20-6 and 4.20-7 provide maps of model output showing net change in maximum flow depth as a result of MSEP implementation, during 10-year and 100-year events, respectively. As shown on these figures, both flow depth and velocity increase slightly across the site in response to MSEP implementation. Post-development flow conditions at and downstream of the site are generally similar to the pre-development conditions, with some areas showing slight increases in flow (e.g., yellow shading near southeast corner of the site), and some areas showing slight decreases in flow (e.g., green shading near northeast boundary of the site). Changes to flow patterns resulting from development of the MSEP site primarily consist of slight rerouting of flow within the project site resulting from slight changes in interior surface roughness and construction of perimeter roadways and fencing. The changes to on-site flow patterns are evidenced by slight changes in peak flow rate and total outflow volume at the flow analysis cross-sections, as discussed above.

To evaluate the total area of drainages located on the MSEP site that would be disturbed by the project, a field reconnaissance was completed at the MSEP site. The field reconnaissance provided a preliminary determination with respect to state jurisdictional waters located within the footprint of MSEP facilities. No federally jurisdictional waters were identified. Table 4.20-4 provides a summary of waters that are anticipated to be jurisdictional at the state level, which are located within the MSEP footprint, for the solar field.

The effects of the MSEP on flows at the solar field were investigated using the hydrologic modeling described previously. Modeled results indicate that the MSEP would result in increases in flow rate of up to approximately 24 percent at cross-sections XS-2 and XS-3 (Tables 4.20-2 and 4.20-3). As discussed previously for erosion and sedimentation impacts, this modeled increase would result largely from the installation of roads on site, where stormwater is expected to experience less drag as it moves across roads than across native soils, resulting in increased flow rates.

TABLE 4.20-4
ANTICIPATED WATERS OF THE STATE, SOLAR FIELD SITE

Channel Forms	Permanent Impact (acres)		
	Unit 1	**Unit 2**	**Total**
Single Thread	0	1.5	1.5
Man-made Borrow Pit	0	0	0
Single Thread, Compound, Swales	47.6	103.3	150.9
Compound, Swales, Discontinuous Channels	8.8	20.3	29.5
Solar Field Total	**56.4**	**125.1**	**181.5**

SOURCE: Tetra Tech, 2011a

The potential for the MSEP to result in increased stormwater flows, such that existing or planned stormwater drainage facilities could be insufficient to convey flows, is considered minor. As noted above, the greatest potential for increase in flows would occur during a 100-year event, when modeled outfall from the site would increase by +200 cfs. Implementation of **Mitigation Measure WATER-3**, which would require implementation of drainage control and other facilities to minimize changes to downstream hydrology, would ensure that these changes do not result in a net impact to downstream waterways.

New impervious surfaces associated with the site would be limited in extent, and associated only with limited on-site paved areas and proposed structures. In total, a maximum of 7.9 acres of additional impervious surfaces would be installed, including 3.0 acres for the water treatment area, 0.3 acres for the O&M building and associated parking, and 4.6 acres for the main access road. Stormwater falling onto the solar arrays would drain onto the ground underneath, which would remain pervious. Solar array mounts, brackets, and transformers would result in only a very minor increase in total on-site impervious surfaces.

Gen-Tie Line. To evaluate the total area of drainages that would be disturbed by the Project, a field reconnaissance was completed along the proposed gen-tie line alignment. The field reconnaissance provided a preliminary determination with respect to state jurisdictional waters located within the footprint of the gen-tie line facilities. Table 4.20-5 provides a summary of waters that are anticipated to be jurisdictional at the state level, which are located within the footprint of the proposed gen-tie line.

Installation and operation of the proposed gen-tie line could alter natural stormwater drainages along the alignment of the proposed facility. Similar to the solar field, such changes could result in altered runoff and erosional processes on site, which could lead to increased erosion and sedimentation on site or downstream. In extreme cases, unless properly designed, undercutting of gen-tie facilities could occur, causing damage to proposed facilities, and/or additional on-site and downstream erosion and sedimentation effects.

TABLE 4.20-5
ANTICIPATED WATERS OF THE STATE, GEN-TIE LINE

Channel Forms	Impacts (acres)	
	Temporary	**Permanent**
Single Thread	0.1	0.4
Man-made Borrow Pit	0.2	0.3
Single Thread Compound, Swales	0.9	1.2
Compound Swales Discontinuous Channels	0.2	0.3
Total	**1.4**	**2.2**
Total Temporary and Permanent	**3.6**	

SOURCE: Tetra Tech, 2011a

Residual changes in hydrology would be minimal. The proposed gen-tie line would result in construction of new impervious surfaces; specifically, the small mounting pad areas associated with each pole would be impervious. Access roads and spur roads for the gen-tie line, as well as the proposed distribution line roads, may be paved (the remainder of this analysis assumes that access roads to the gen-tie line would be paved) and therefore could become impervious. The proposed switchyard would have an increased concentration of impervious facilities, but these would be limited in extent, and surrounding areas would remain pervious. In total, an additional 39 acres of impervious facilities would result from installation of the gen-tie line and associated facilities, including 0.5 acres associated with mounting pads, 28.2 acres associated with the proposed gen-tie access road, 2.8 acres associated with the proposed gen-tie spur roads, 2.0 acres for switchyards, 1.9 acres associated with the proposed distribution line spur roads, and 3.6 acres associated with the proposed distribution line maintenance road. Implementation of **Mitigation Measure WATER-3**, which would require development and adherence to the conditions of a Comprehensive Drainage, Stormwater, and Sedimentation Control Plan, would reduce potential impacts from these new impervious surfaces.

Flood Hazards

The drainage model developed for the solar field did not quantify or consider anticipated flood flows within the McCoy Wash. For perspective in understanding the extent to which the change in flows leaving the MSEP site could impact the hydrology, and associated flooding potential, of the McCoy Wash along the eastern boundary of the site, a review of anticipated peak outflows in comparison to anticipated McCoy Wash flows is useful. As modeled, the peak outflow from the eastern boundary of the solar field (represented as the sum of peak flow rates across XS-1, XS-2, and XS-6 in Table 4.20-2) is slightly less than 2,600 cfs for the 100-year storm event, with maximum changes between pre- and post-development conditions (across XS-1, XS-2, and XS-6 in Table 4.20-2) in peak flow rate of less than +200 cfs. Peak flow rates through McCoy Wash east of the site for the 100-year hydrologic event have been estimated to be on the order of 27,000 cfs (Tetra Tech, 2011b, as cited in AECOM, 2011a). Therefore, the increase in flows associated with the installation of the solar field and associated facilities (+200 cfs), between pre- and post-development 100-year peak flow rate (across XS-1, XS-2, and XS-6 in Table 4.20-2), equates to approximately 0.7 percent of simulated peak flow rate from the northwest and northeast basins of McCoy Wash (27,000 cfs; AECOM, 2011a). This minimal level of increase is not anticipated to result in a noticeable increase in surface flooding downstream, including flood depth and flood extent.

On-site inundation of the solar arrays during flood periods is anticipated as a matter of Project design. However, some of the proposed facilities on-site would require protection from flooding. For instance, unless suitably protected from flooding, the proposed on-site buildings could become inundated during a heavy storm event. Additionally, the proposed evaporation pond could become inundated. Implementation of **Mitigation Measure WATER-4**, which would require that all on-site buildings, maintenance areas, designated parking lots, and associated facilities be constructed at an elevation of at least 2 feet above the highest anticipated flood flows during a 100-year event, would reduce such risks. Implementation of **Mitigation Measure WATER-5** would ensure that workers and employees are protected in the event of a flood.

Water Quality

Potential threats to surface water and groundwater quality related to operation include: accidental releases from the evaporation pond that would be used to dispose of reverse osmosis reject water; leaching of treated wastewater from the proposed septic field; potential increases in sediment loads to adjacent washes; and accidental spills of hydrocarbon fuels, oils, and greases, antifreeze, and other liquids associated equipment maintenance and usage on site.

Accidental releases from the 1-acre evaporation pond could result from accidental overtopping during a storm event. This could result in a release of concentrated brine and associated water quality pollutants from the evaporation pond and into adjacent surface runoff. **Mitigation Measure WATER-2** would require that the evaporation pond be sized to accommodate project flows plus a 25-year storm event, with at least 1 foot of freeboard. Implementation of this mitigation measure would minimize risk of spillage of water from the evaporation pond onto adjacent areas during major storm events.

Degradation of groundwater quality could occur as a result from leakage of the proposed pond liner. The evaporation pond would require a Title 27 discharge permit issued by the Colorado River RWQCB, which would require adherence to WDRs and minimum standards for the pond liner, including monitoring. According to preliminary discussions with the Colorado River RWQCB, the WDRs would require the preparation of a Water Quality Monitoring and Response Plan that would include monitoring of the pond liner to detect leaks, as well as groundwater monitoring. Groundwater monitoring would be done using existing wells where possible, and may include additional monitoring wells as needed to provide adequate monitoring of groundwater quality, pursuant to the stipulations of the WDRs. Application of WDRs to the facility by the Colorado River Basin RWQCB would be tailored to the anticipated quality of water contained in the evaporation pond, in order to protect beneficial use from accidental release of pond pollutants. Therefore, adherence to the conditions of the WDRs would ensure that groundwater quality would be protected from degradation, consistent with the Basin Plan.

The use and application of septic fields is a long established practice as a method of wastewater treatment. The proposed septic system would be installed approximately 5 to 6 feet deep, in accordance with local regulations. These types of systems result in wastewater constituents being non-detectable within 3 feet of the bottom of the leach field.

The septic system and leach fields for the MSEP would be constructed in accordance with the requirements:

1. Uniform Plumbing Code (UPC) §15.24.010,Appendix K for Private Sewage Disposal – General and Disposal Fields; and

2. UPC §8.124.030 (Approval and Construction Permit for Sewage Discharge) and §8.124.050 (Operation Permit for Sewage Disposal).

The anticipated changes in flow rate indicated for the MSEP would range up to an increase of approximately 21 percent at the indicated cross-sections, as discussed previously. As discussed above, this modeled increase would result largely from the installation of roads on site, where stormwater is expected to experience less drag as it moves across roads than across native soils, resulting in increased flow. Where faster moving water or greater volumes of water contact unconsolidated sediments, increased erosion could result, both on site and downstream of the MSEP site. Implementation of Mitigation Measure WATER-3, which would require development and adherence to the conditions of a Comprehensive Drainage, Stormwater, and Sedimentation Control Plan, would reduce the potential for erosion and sedimentation.

During operation and maintenance, the on-site use of trucks, maintenance equipment, automobiles, and other on-site equipment could result in the accidental release of water quality pollutants. For instance, water quality impacts could occur during operation if contaminated or hazardous materials (oils, greases, fuels, etc.) used during operation were to contact stormwater and drain off-site. Potential spills of hazardous materials would be managed through hazardous materials management measures (see Section 4.9, *Hazards and Hazardous Materials*).

Decommissioning

Groundwater Supply and Recharge

Decommissioning would take 24 months and would require approximately the same water use for dust suppression as the construction phase, resulting in additional groundwater pumping of up to 250 AFY during decommissioning, or a total of up to 500 AF. As described for Project construction, which would use a greater overall volume of groundwater and the same or greater annual pumping rate, model results indicated that drawdown outside of the solar field boundary as well as potential effects of withdrawals on PVID facilities were minimal. Therefore, because decommissioning would result in lesser withdrawals than construction, it would not have an adverse effect on groundwater supply or recharge.

Additionally, operation period pumping would be minimal. Therefore, ceasing of operation period pumping due to decommissioning would be expected to result in a minimal to negligible increase in remaining groundwater supplies within the basin.

Surface Water and Drainage Patterns

Decommissioning of the MSEP would result in a minor reduction in on-site impervious structures, because on-site facilities would be removed. Removal of such facilities would not substantially affect on-site or downstream hydrology, due to the limited extent of such facilities. Similar to MSEP construction, decommissioning could result in alteration of on-site topography, and therefore of on-site drainage patterns. These changes could result in altered erosion and sedimentation patterns, which could affect downstream areas on site or off site. Implementation of Mitigation Measure WATER-3, which includes development and adherence to the recommendations of a Decommissioning Drainage, Stormwater, and Sedimentation Control Plan, would reduce potential impacts from erosion and sedimentation.

Flood Hazards

Decommissioning would remove structures and people from areas that may be subject to flood-related hazards. Effects during decommissioning would be similar to construction. After decommissioning is completed, no further effects would occur.

Water Quality

Decommissioning impacts generally would be similar to those indicated for construction, with respect to potential for release of construction related water quality pollutants. Implementation of Mitigation Measure WATER-1 during decommissioning would reduce the potential for water quality degradation during that period. Adherence to Colorado River RWQCB policies and stipulations of the evaporation pond’s WDRs would ensure that water quality impacts associated with removal of that facility would be minimized.

4.20.4 Alternative 2: Reduced Acreage

4.20.4.1 Direct and Indirect Impacts

Construction, Operation, Maintenance, and Decommissioning

Construction of the reduced acreage alternative would be anticipated to have similar effects on water quality, groundwater levels and storage, erosion and sedimentation, surface water hydrology, flooding, and on site flood related impacts, as compared to the Proposed Action, except that Alternative 2 would result in reduced intensity of those impacts. The reduction in intensity of impacts for Alternative 2 in comparison to the Proposed Action would be roughly proportional to the reduced size of Alternative 2, in comparison to the Proposed Action. To ensure that the impacts of Alternative 2 are addressed, implementation of Mitigation Measures WATER-1 through WATER-5 would reduce potential impacts as described for the Proposed Action.

4.20.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.20.5.1 Central Route

Direct and Indirect Impacts

Construction, Operation, Maintenance, and Decommissioning

Construction, operation, maintenance, and decommissioning of the Central Route would have similar effects on water quality, erosion and sedimentation, surface water hydrology, and flooding, as compared to the proposed gen-tie line and access road. The primary difference between the proposed Eastern Route and the Central Route would be that a portion of the potential water quality, erosion, sedimentation, and flooding associated with construction, changes to drainage patterns, and new impervious surfaces, along the proposed gen-tie line route, would be altered. The Central Route would result in installation of a gen-tie line and associated access roads along an approximately 12.5-mile corridor, which is approximately 2 miles shorter than the Proposed Action. Therefore, the potential for water quality degradation would be slightly reduced in intensity relative to the Eastern Route proposed as part of the Project. Similarly, the potential for alteration of on-site hydrology, such as effects on erosion, sedimentation, and flooding, and including effects associated with proposed impervious surfaces, would be similar to those of the proposed Eastern Route, except slightly reduced in intensity. Potential disturbance areas for Waters of the State would be limited to those shown in Table 4.20-6.

TABLE 4.20-6
ANTICIPATED WATERS OF THE STATE, ALTERNATIVE 3,
CENTRAL ROUTE GEN-TIE LINE

	Impacts (acres)	
Channel Forms	**Temporary**	**Permanent**
Single Thread	0.1	0.4
Man-made Borrow Pit	0.2	0.3
Single Thread Compound, Swales	0.9	1.2
Compound Swales Discontinuous Channels	0.2	0.3
Total	**1.4**	**2.2**
Total Temporary and Permanent	**3.6**	

Implementation of Mitigation Measures WATER-1 and WATER-3 would ensure that construction, operation, maintenance, and decommissioning period impacts would be minimized. Other potential impacts and mitigation measures identified for the Proposed Action are associated with the solar plant site and other components of the Project that are not relevant to the selection of a gen-tie line and access road route. Therefore, these additional impacts and mitigation measures would be the same for the Central Route.

4.20.5.2 Western Route

Direct and Indirect Impacts

Construction, operation, maintenance, and decommissioning of the Western Route would have similar effects on water quality, erosion and sedimentation, surface water hydrology, and flooding, as compared to the proposed gen-tie line and access road. The primary difference between the proposed Eastern Route and the Western Route would be that a portion of the potential water quality, erosion, sedimentation, and flooding associated with construction, changes to drainage patterns, and new impervious surfaces, along the proposed gen-tie line route, would be altered. The Western Route would result in installation of a gen-tie line along an approximately 15.5-mile corridor, which would be approximately 1 mile longer than the Proposed Action. Therefore, the potential for water quality degradation would be slightly increased in intensity, in comparison to the Eastern Route proposed as part of the Project. Similarly, potential for alteration of on-site hydrology, such as effects on erosion, sedimentation, and flooding, and including effects associated with proposed impervious surfaces, would be similar to those of the proposed Eastern Route, except slightly increased in intensity. Potential disturbance areas for Waters of the State would be limited to those shown in Table 4.20-7.

TABLE 4.20-7
ANTICIPATED WATERS OF THE STATE, ALTERNATIVE 3, WESTERN ROUTE GEN-TIE LINE

Channel Forms	Impacts (acres)	
	Temporary	**Permanent**
Single Thread	0.1	0.4
Man-made Borrow Pit	0.2	0.3
Single Thread Compound, Swales	0.9	1.2
Compound Swales Discontinuous Channels	0.2	0.3
Total	**1.4**	**2.2**
Total Temporary and Permanent	**3.6**	

Implementation of Mitigation Measures WATER-1 and WATER-3 would ensure that construction, operation, maintenance, and decommissioning-related impacts would be minimized. Other potential impacts and mitigation measures identified for the Proposed Action are associated with the solar plant site and other components of the Project that are not relevant to the selection of a gen-tie line and access road route. Therefore, these additional impacts and mitigation measures would be the same for the Western Route.

4.20.6 Alternative 4: No Action Alternative

Under Alternative 4, no change to baseline conditions with respect to on site or downstream hydrology, water quality, or groundwater levels would occur. Consequently, this Alternative would not cause the potential hydrologic resources impacts described for the Project.

4.20.7 Cumulative Impacts

The geographic scope of the cumulative impacts analysis with respect to water resources includes those areas overlying the PVGB for groundwater-related impacts, and the watershed for water quality and drainage-related impacts. The temporal scope for potential cumulative impacts includes the construction, operation, and maintenance periods of the Project.

4.20.7.1 Groundwater Levels and Supplies

As analyzed above, implementation of the MSEP would contribute the incremental impacts summarized below to the cumulative scenario. With respect to groundwater levels and groundwater supplies, the Project-specific groundwater model included consideration of a cumulative scenario, which included seven solar power projects in the vicinity of the MSEP that would be located on the Palo Verde Mesa: the Blythe Energy Project II, Blythe PV Project, BSPP, Desert Quartzite Solar Farm, Gypsum Solar, the MSEP, and the enXco McCoy Project. Together, these projects would result in a cumulative total pumping of approximately 131,000 AF of water over a 33-year period, including construction and operation flows.

Results from the cumulative model analysis are shown in Figure 4.20-8. As shown, results indicate that higher areas of drawdown would occur around the Blythe Energy II and enXco McCoy projects. The predicted drawdown contour of 0.01 foot is predicted at the end of 33 years of pumping to remain within the PVMGB, although it is located very close to the boundary with the PVVGB. Of the total 131,000 AF of water use under the cumulative scenario, the MSEP would result in only 1,680 to 2,100 AF of water use, or about 1.3 percent of total cumulative scenario water use. Additionally, as shown on Figure 4.20-8, the MSEP would not result in a cone of depression under the cumulative scenario.

4.20.7.2 Water Quality Impacts

With respect to water quality, the following projects were considered, which are located within the same watershed as the MSEP: BLM Renewable Energy Projects, including enXco McCoy, BSPP, Blythe Airport Solar I Project, Desert Quartzite, Gypsum Solar, Palo Verde 2, Rio Mesa; and other projects, including Blythe Energy Project Transmission Line, Blythe PV Project, City of Blythe projects, DPV2, CRS, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, RCL00161R1, BGR100258, CUP03602, and the Palo Verde Mesa Solar Project.

During construction and operation of each of the cumulative projects, it is anticipated that fuels, antifreeze, paints, oils, and various other potential water quality pollutants, similar to those discussed for direct MSEP impacts, would be stored or utilized on site, in support of construction and operation period activities. Handling of such materials for all cumulative scenario projects would be regulated under applicable local, state, and federal requirements, as discussed for direct MSEP impacts. Cumulative projects could require implementation of additional mitigation in order to ensure minimization of potential impacts – such mitigation would be required in context of required environmental reviews completed for each project. Adherence to these requirements and mitigation measures would ensure that water quality effects of accidental releases of hazardous chemicals would be minimized. Minimal residual effects on water quality could occur, however, these would be expected to be discrete in nature, associated with isolated incidents (accidental spills), and generally of low occurrence due to the nature of projects anticipated, which do not represent major hazardous materials users or manufacturers.

With respect to water quality, erosion and sedimentation, the following projects were considered, which are located within the same watershed as the MSEP: BLM Renewable Energy Projects, including enXco McCoy, BSPP, Blythe Airport Solar I Project, Desert Quartzsite, Gypsum Solar, Palo Verde 2, Rio Mesa; and other projects, including the Blythe Energy Project Transmission Line, Blythe PV Project, City of Blythe projects, DPV2, CRS, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, RCL00161R1, BGR100258, CUP03602, and the Palo Verde Mesa Solar Project.

These projects would result in installation of facilities and other earth work, including the installation of new impervious surfaces, which could alter on site drainage patterns or otherwise result in changes in on site drainage patterns. Potential changes would be generally similar in nature to those discussed for the MSEP, and would include a net increase in impervious surfaces and various grading activities, and facilities installations. These changes could result in concurrent alteration of stormwater flows and drainage patterns, which could potentially result in increased erosion and sedimentation. However, for the purposes of this analysis, it is presumed that the other projects considered here would also be required to implement mitigation measures, concurrent with NEPA, and other applicable environmental regulations. Implementation of such measures, which establish thresholds in the context of cumulative conditions, is anticipated to include construction and operation period controls on stormwater management, would minimize overall contributions to erosion and sedimentation within the watershed. While some level of residual impact would occur for each project, the applied mitigation measures are expected to be sufficient to minimize residual effects by requiring avoidance and mitigation of components and activities that would cause erosion and sedimentation.

4.20.7.3 Stormwater Drainage and Flooding

With respect to stormwater drainage, drainage system capacity, and flooding, the following projects were considered, which are located within the same watershed as the MSEP: BLM Renewable Energy Projects, including enXco McCoy, BSPP, Blythe Airport Solar I Project, Desert Quartzite, Gypsum Solar, Palo Verde 2, Rio Mesa; and other projects, including the Blythe Energy Project Transmission Line, Blythe PV Project, City of Blythe projects, DPV2, CRS, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, RCL00161R1, BGR100258, CUP03602, and the Palo Verde Mesa Solar Project.

The cumulative projects, which represent primarily energy and other infrastructure projects, would not result in extensive development of new impervious surfaces. New impervious surfaces could include access roads, new buildings, and other areas; however, it is expected that runoff from these areas would be controlled via BMPs and other legal requirements. Of the cumulative projects considered within this analysis, the BSPP and MSEP would be the primary projects within the subwatershed where the project is located. As addressed in the discussion of direct impacts, this area drains into PVID-operated drainages. Both the MSEP and the BSPP implement drainage and flood management mitigation measures, designed to minimize flood impacts on site, and also minimize changes downstream. Both the MSEP and BSPP could result in minor residual increases in peak flood flows. However, the magnitude of these collective increases is anticipated to be within the available drainage capacity of applicable PVID drainages. Potential impacts associated with the remaining cumulative projects would be dispersed throughout the watershed. As a result, the cumulative projects would not rely on a single tributary or drainage structure/facility in order to convey stormwater and flood flows.

With respect to flood-related dangers, adherence to the proposed mitigation would ensure that potential direct impacts would be avoided for the MSEP site. Many of the other proposed projects reviewed in support of this cumulative analysis would utilize physical barriers and engineering to protect the site from inundation. However, other proposed projects would use a method for drainage control similar to the method used by the Project, namely, to permit continued overland flow on-site. Because such a flood management method could result in injury to workers or facilities, it is anticipated that other projects considered would also implement mitigation measures to minimize potential harm to workers and on-site facilities.

4.20.8 Mitigation Measures

Implementation of the following mitigation measures would address potential impacts associated with hydrologic resources.

WATER-1: Implementation of a SWPPP. To ensure that stormwater quality is protected during the construction and decommissioning period for the MSEP, as well as any maintenance done during the operational period, the Applicant shall comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance (Order No. 2009-0009-DWQ) (Construction General Permit). Compliance with the Construction General Permit will ensure that the proposed construction activities would include BMPs to manage stormwater and control sediment and other pollutants from leaving the Project construction site. Compliance with the Construction General Permit will require completion and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for the MSEP site that shall be in effect during all construction, maintenance, and decommissioning activities for the solar field, the gen-tie line, and all associated facilities. The SWPPP shall identify pollutant sources that may affect the quality of stormwater discharge and shall require the implementation of BMPs to reduce pollutants in storm water discharges.

BMPs may include, but would not be limited to:

1. If grading occurs during the rainy season (Oct. 15 to Apr. 15), storm runoff from the construction area shall be regulated through a storm water management/erosion control plan that shall include temporary on-site silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material shall be covered and runoff diverted away from exposed soil material. If work stops due to rain, a positive grading away from slopes shall be provided to carry the surface runoff to areas where flow would be controlled, such as the temporary silt basins. Sediment basins/traps shall be located and operated to minimize the amount of off-site sediment transport. Any

trapped sediment shall be removed from the basin or trap and placed at a suitable location on-site, away from concentrated flows, or removed to an approved disposal site.

2. To minimize discharge of sediment during storm events, temporary erosion control measures (such as fiber rolls, staked straw bales, detention basins, check dams, geofabric, sandbag dikes, check dams, erosion control blankets, matting, and other fabrics or other ground cover as available) shall be implemented and remain in place until surface sediments can be stabilized.

3. Sediment shall be retained on-site by a system of sediment basins, traps, or other appropriate measures.

4. No disturbed surfaces may be left without erosion control measures in place during the rainy season.

5. Erosion protection shall be provided on all cut-and-fill slopes, as relevant to the MSEP, and shall be initiated as soon as possible after completion of grading and prior to the onset of the rainy season.

6. BMPs selected and implemented for the Project shall be in place and operational prior to the onset of construction on the site. The construction and decommissioning phase facilities shall be maintained regularly and cleared of accumulated sediment as necessary. Effective mechanical and structural BMPs that could be implemented at the Project site include the following:

   a. Mechanical storm water filtration measures, including oil and sediment separators or absorbent filter systems such as the Stormceptor® system, shall be installed within the storm drainage system to provide filtration of storm water prior to discharge.

   b. Roof drains shall discharge to natural surfaces or swales where possible to avoid excessive concentration and channelizing of storm water.

   c. Permanent energy dissipaters shall be included for drainage outlets.

   d. The water quality detention basins shall be designed to provide effective water quality control measures including the following:

      i. Maximize detention time for settling of fine particles;

      ii. Establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets;

      iii. Maximize the elevation of berms surrounding detention basins to allow the highest amount of infiltration and settling prior to discharge.

7. Hazardous materials such as fuels and solvents used on the construction sites shall be stored in covered containers and protected from rainfall, runoff, vandalism, and accidental release to the environment. All stored fuels and solvents shall be contained in an area of impervious surface with containment capacity equal to or greater than the volume of materials stored. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals shall be designated as responsible for prevention and cleanup activities.

8. Equipment shall be properly maintained in designated areas with runoff and erosion control measures to minimize accidental release of pollutants.

9. Impervious surface areas shall be graded or constructed to drain to a filtration BMP or equally effective alternative.

WATER-2: The proposed evaporation ponds shall be sized to accommodate operational discharges plus a 25-year storm event, with no less than 1 foot of freeboard.

WATER-3: Comprehensive Drainage, Stormwater, and Sedimentation Control Plan (Plan). The Applicant shall ensure that the Plan is completed prior to the initiation of construction (or decommissioning as relevant), and ensure that recommendations of that plan are implemented.

The Applicant shall ensure that additional stormwater retention measures and facilities, including but not limited to retention basins and other facilities or features designed to retain stormwater on site, shall be implemented within the MSEP site. Stormwater retention facilities shall be designed to accommodate increases in flows that would be generated as a result of MSEP implementation, in comparison to existing conditions, as identified in Table 4.20-2 and 4.20-3, such that MSEP implementation would not result in a net increase in discharge from the site under either a 10-year or 100-year storm event.

At the installation sites for new buildings, roads, the switchyard, transformers, solar panels, the gen-tie line, transmission towers, and other facilities that would be installed in association with the MSEP, designs for these facilities shall be reviewed and approved by the BLM with respect to potential generation of altered stormwater flows, erosion, and sedimentation. The use of flow-obstructing fencing shall be avoided; instead, fencing that allows for the passage of water while minimizing buildup of debris shall be utilized on site. To ensure implementation of Applicant Proposed Measure BIO-1b and Mitigation Measure WIL-1, the Applicant shall coordinate with the BLM, CDFG, and USFWS to determine appropriate fencing design. All proposed grading and impervious surfaces on site shall be reviewed and approved by the BLM, with respect to its potential to cause or result in additional erosion and sedimentation, increased stormwater flows, or altered drainage patterns that could lead to unintentional ponding or flooding on site or downstream, and/or additional erosion and sedimentation. Stormwater flows emanating from proposed impervious surfaces shall be retained on site and/or directed into channels and other stormwater infrastructure, and shall be sized such that unintentional ponding, flooding, erosion, or sedimentation would not occur on site or downstream. Additionally, the number of road crossings over washes shall be minimized and necessary crossings shall be designed to provide adequate flow-through capacity during storm events, up to the 100-year event. In order to minimize disturbance to existing floodplains and natural channels, final facility designs shall be employed which minimize, to the extent practicable, the footprints of roads, parking lots, and other proposed facilities.

WATER-4: In order to ensure that proposed on-site buildings and staff therein are protected from flooding, all on-site buildings and fill areas shall be placed outside of frequent flood flow areas. Additionally, proposed on-site buildings, maintenance areas, designated parking lots, and associated facilities shall be constructed at a finished floor elevation of at least 2 feet above the highest anticipated flood flows during a 100-year event. The proposed evaporation pond shall include berms of levees that reach at least 2 feet above the highest anticipated flood flows during a 100-year storm event, or at least 2 feet above the highest adjacent ground, whichever is greater, in order to protect the evaporation pond from incident flooding events and ensure that the ponds are not inundated by flood flows. Slope protection shall be provided for all fill areas exposed to erosive flows. In specific areas where frequent flows are anticipated, posts for solar panels shall be constructed on a deepened footing, as recommended by the geotechnical engineer, in order to withstand anticipated scouring.

WATER-5: Flood Safety Plan. Prior to initiation of MSEP operation, the Applicant shall complete a Flood Safety Plan for the site. The Flood Safety Plan shall delineate specific actions to be completed during a flood event, in order to protect workers and facilities as relevant. The Plan shall identify refuge areas that would not be susceptible to 100-year flooding, and provide requirements and guidance with respect to avoiding injury, death, or equipment damage during a flood event. The Plan shall be adhered to and updated, as needed, during the entire operation period of the MSEP.

WATER-6: Construction period flood protection. The Applicant shall ensure that during construction, temporary construction related structures such as bridges, roads, berms, and other facilities would be constructed so as to avoid interference with 100-year flood flows. Temporary installation of the following types of facilities shall be avoided: temporary elevated earthen structures such as roads and berms; earthen bridges or other structures within a waterway or flood conveyance that could interfere with flood flows; dams; unnecessary ditches; and other major structures that could concentrate flood flows. Additionally, to the extent practicable, the Applicant shall ensure that the construction process proceeds in a manner so as to minimize exposure of facilities to construction period flooding. Temporary ditches and trenches (such as for pipes, wires, or other infrastructure) shall be completed and backfilled as quickly as possible, and shall not be left open for extended periods. Drainage infrastructure shall be installed prior to installation of the solar arrays and other facilities on site. Other facilities that may be susceptible to flood damage during construction shall be managed so as to minimize construction time of those facilities.

WATER-7: Groundwater Monitoring and Mitigation Plan. A Groundwater Monitoring and Mitigation Plan shall be prepared prior to construction. The Groundwater Monitoring and Mitigation Plan shall be prepared by a qualified hydrogeologist registered in the State of California and submitted by the Applicant to the BLM for approval, and to the RWQCB for review and comment. This Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow. Monitoring shall be performed during pre-construction, construction, and operation of the Project, with the intent to establish pre-construction and Project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially affected existing private wells, if any. Water quality monitoring shall include annual sampling and testing for constituents as required by the California Department of Health for the proposed on-site potable use.

The Groundwater Monitoring and Mitigation Plan shall include a schedule for submittal of quarterly data reports by the Applicant to the BLM, for the duration of the monitoring period. These quarterly data reports shall be prepared and submitted to the BLM for review and approval, and shall include water level monitoring data (trend analyses) from all pumping and monitoring wells. Based on the results of the quarterly reports, the Applicant and the BLM shall determine if the Project's pumping activities have resulted in water level decline in the baseline at any of the monitoring wells, including nearby private wells, if any. If significant drawdown occurs at off-site wells, the Applicant shall immediately reduce groundwater pumping until water levels stabilize or recover, to a reasonable level.

The Groundwater Monitoring and Mitigation Plan shall also include a schedule for submittal of annual data reports by the Applicant to the BLM, for the first 5 years of the project (including the construction period). These annual data reports shall be prepared and submitted to the BLM for review and approval, and shall include at a minimum the following information:

- Daily usage, monthly range, and monthly average of daily water usage in gallons per day;
- Total water used on a monthly and annual basis in acre-feet; summary of all water level data and water quality data;
- Identification of trends that indicate potential for off-site wells to experience decline of water level; and
- Identification of all sources of water by type (i.e., groundwater, surface water, municipal water) and well/location used on BLM Land.

The BLM shall determine whether groundwater wells surrounding the Project site and Project supply well(s) are influenced by Project activities in a way that requires additional mitigation and, if so, shall determine what measures are needed. After the first 5 years of the Project, the Applicant and the BLM shall jointly evaluate the effectiveness of the Groundwater Monitoring and Mitigation Plan and determine if monitoring frequencies or procedures should be revised or eliminated.

4.20.9 Residual Impacts after Mitigation Incorporated

Residual impacts associated with implementation of the MSEP after mitigation is implemented would include minor adverse impacts for the following categories: (1) surface water quality: minor reduction in water quality during construction, operation, and decommissioning; (2) groundwater quality: minor reduction in groundwater quality during construction, operation, and decommissioning; (3) groundwater level/storage: minor degree of reduction in water levels is expected during construction and operation; (4) drainage and flooding: minor changes during construction, operation, and decommissioning.

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4.21 Wildland Fire Ecology

4.21.1 Methodology for Analysis

This analysis of impacts of the Proposed Action and alternatives on wildland fire ecology assesses the size, location, and environmental setting of the proposed solar plant and ancillary facilities; the number of vehicles that would access the site for construction, operation, maintenance, and decommissioning activities (as such bear on the incidence of human-vehicle and equipment-caused wildfire), and the primary causes of fire in the area, which are lightning and vehicles. Vehicle and equipment estimates are from Section 4.17, *Transportation and Traffic*.

4.21.2 Applicant Proposed Measures

There are no APMs to address potential effects to wildland fire ecology.

4.21.3 Alternative 1: Proposed Action

4.21.3.1 Direct and Indirect Impacts

Construction

During construction, heavy equipment and passenger vehicles driving on vegetated areas prior to clearing and grading could increase the risk of fire. Heated mufflers, any explosives used during site preparation, and improper disposal of cigarettes potentially could ignite surrounding vegetation. Ignition of fuels during construction could occur anywhere in within the Project site or disturbance areas for the gen-tie line and access road. Direct impacts of wildfire would include mortality of plants and wildlife and loss of forage and cover. Annual plants and burrowing wildlife would be less affected in the short term because seeds in the soil and animals under the soil would not likely be consumed. Indirect impacts would result in changes to the vegetation communities and the wildlife supported by these communities. The spread of invasive plants, especially annual grasses, creates an increased potential for wildfires which can result in disastrous ecological change.

The probability of a wildfire to occur as a result of Project construction would be low due to the moderate-risk site conditions, normally extremely patchy fuel distribution, dry climate, and the proposed level of heavy equipment use. However, during extreme weather conditions, a grass fire originating at the site could spread up the slopes of the adjacent McCoy Mountains or spread toward other projects out of control and pose a risk to life and property, and the risk of fire as a result of Project construction therefore is considered substantial.

As described in Section 3.21, the occurrence of wildfires in the area historically has been low; however, repeated fires are known to decrease the perennial plant cover and to aid some invasive annual plants. In turn, where they gain widespread propagation, these invasive plants would provide fuel to carry flames, potentially resulting in larger fires in the future. Surface disturbing activities and vehicle use that promotes the introduction of invasive plants would increase this likelihood. Such impacts could occur within the fence and beyond. If the introduction of invasive, non-native plants is not controlled during construction, over time the Project site could become dominated with non-native plants that tend to increase the frequency and severity of wildfires. The proposed vegetation management measures described in Section 2.3.1.3.11, including a weed management plan, would minimize the potential for weed colonization and dominance on site by including implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Implementation of these measures would not completely eliminate the introduction of noxious weeds into the study area, but would minimize their introduction and control their spread on the Project site. In addition, during construction, a water truck or other portable trailer-mounted water tank would be kept on-site and available to workers for use in extinguishing small man-made fires. Fire watches would be required during hot work on-site. The proposed EAP would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM and local fire departments for approval before the Applicant receives a Notice to Proceed (NTP). The EAP would help reduce the risk of wildfire on and off site during construction. The Applicant has prepared a Fire Prevention Plan (Appendix I) that provides measures for fire prevention during construction and operation of the Project. Mitigation Measure FIRE-1 would require the Applicant to prepare and implement a Fire Safety Plan, as part of its EAP, that expands on this Fire Prevention Plan and incorporates the use of appropriate fire protection equipment, worker training, and consultation with local fire departments to identify appropriate protocols and procedures for fire prevention and early response to minor fire. These measures would minimize the potential for a wildfire ignition to occur as a result of Project-related construction activities and the presence of personnel on site.

Brooks (1998 as cited in BLM, 2002) performed the most in-depth analyses of the correlations between invasive annual plants and environmental disturbance impacts. He found that, despite representing only 5 percent of the annual plant species in the desert, two invasive annual grasses, red brome (*Bromus madritensis ssp. rubens*) and Mediterranean split grass (*Schismus spp*.), and one invasive forb, fileree (*Erodium cicutarium*), accounted for 66 percent of total plant biomass during a high rainfall year. All three species occur in the study area. Invasive annual grasses contributed greatly to fire fuels, and combustion of dry red brome produced flame lengths and temperatures sufficient to ignite perennial shrubs. Brooks also showed that soil nutrients played a significant role and that nitrogen deposition may enhance the rate of invasion.

Wildfire suppression efforts would result in reduced particulate (PM10) production and visibility impairment from smoke and wind-blown dust. Short-term impacts from fire suppression potentially would increase levels of particulate from surface disturbance of firefighting equipment and operations. Firefighting efforts would use minimal ground disturbing techniques such as aerial fire suppression and ground crews with hand tools. Successful fire suppression efforts would minimize the number of acres burned, and result in less vegetative loss, fewer acres susceptible to immediate weed invasion, and less wind erosion of particulate matter.

Operation and Maintenance

Wildfires are rare in the study area, but can be ignited by lightning, human activities, and transmission line-related fire hazards. The increase in daily vehicle use in the area from workers and machines during operation could increase the risk of ignition. Combustible materials that would be stored and used at the solar plant include diesel fuel for vehicles and equipment, and hydraulic fluid in tracker drives, if applicable. Storage and use of these materials would be performed in accordance with applicable fire code and hazardous materials regulations. Vegetation management of the plant site and linear facilities would control noxious weeds and minimize the potential for vegetation that could ignite. During operation and maintenance of the Project, fire protection systems for the solar plant site would include a fire protection water system for protection of the O&M building and portable fire extinguishers. The fire protection water system would be supplied from a 15,000-gallon raw and fire water storage tank located on the solar plant site near the O&M area.

Electrical transmission lines can initiate a fire if an object, such as a tree limb or kite, simultaneously contacts the subtransmission line conductors and a second object, such as the ground or a portion of the supporting pole, or if two conductors make contact. Conductor-to-conductor contact can occur when extremely high winds force two conductors on a single pole to oscillate so excessively that they contact one another. This contact can result in arcing (sparks) that can ignite nearby vegetation. Electrical arcing from power is more prevalent for lower voltage distribution lines than for transmission lines such as those proposed gen-tie lines because distribution lines are typically on shorter structures and in much greater proximity to trees and vegetation. Additionally, lightning strikes on power lines could create power surges that could result in a fire. Fire hazards from transmission lines are reduced through the use of taller structures and wider rights-of-way. CPUC General Order No. 95 and PRC §4293 contain rules and regulations for vegetation clearance surrounding electrical transmission lines. Further, the Applicant would inspect all components of the proposed transmission line at least annually for corrosion, equipment misalignment, loose fittings, and other common mechanical problems.

High-wind conditions are risky for the spread of wildfire. Wind-blown flaming debris from a fire can ignite vegetation in the surrounding area. The Project’s vegetation management measures, fire protection systems, and adherence to building codes relevant to fire safety and other applicable laws and regulations would reduce the potential for wildfire ignition and the potential for a wildfire to spread out of control. The Applicant would be required to comply with vegetation clearance requirements around structures at the site. In addition, temporary and permanent roads across the Project site would break the continuity of fuels at the site, which would slow or stop the progression of potential wildfires originating at the site.

The probability of a wildfire to occur as a result of Project operation would be low due to the moderate-risk site conditions and low level of operational and maintenance activities; however, a wildfire that escapes control and spreads beyond the Project could result in a high level of damage to biological resources and other natural resources, such as air quality and water quality, in addition to the potential for loss of life and destruction of property.

The proposed weed management plan and other vegetation management measures (see Section 2.3.1.4.11) would minimize the potential for weed colonization and dominance on site by implementing a risk assessment of the invasive weed species currently known within the study area, control of their spread on site, and minimizing the introduction of new weed species. Additionally, fire protection would be provided through an EAP which would include fire prevention and suppression measures, thus helping reduce the risk of wildfire on and off site during operation and maintenance.

Climate change would result in a small but general increase in temperature, and also could result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves or wetter seasons that increase fuel loads, during operation and maintenance of the Project.

Decommissioning

Impacts from decommissioning would be similar to those described in the construction section.

4.21.4 Alternative 2: Reduced Acreage

4.21.4.1 Direct and Indirect Impacts

Alternative 2 would cause the same types of wildland fire impacts as the Proposed Action. However, the chance for exotic annual weeds to establish and change the fire regime in the Project Area would decrease due to the development of fewer acres (Tetra Tech EC, 2012) resulting from construction of Unit 1 only. Construction and decommissioning workers would be on site for a shorter period of time, reducing the likelihood of wildfire ignition due to their presence and/or activities. During operation and maintenance, fewer employees would be on site, and less maintenance-related vehicle and equipment use would be required. Consequently, the fire-related impacts associated with the construction of Alternative 2 would be reduced relative to the Proposed Action.

4.21.5 Alternative 3: Reconfigured Gen-tie/Access Road Routes

4.21.5.1 Central Route

The Central Route would cause the same types of wildland fire impacts as the Proposed Action Proposed Action, although the location of the impacts associated with the proposed gen-tie route would be shifted to the west relative to the Proposed Action. The Central Route would be shorter than for the Proposed Action, resulting in a slightly shorter duration for construction and decommissioning and, thereby, a slightly reduced potential for accidents or fires to occur. Consequently, the wildland fire-related impacts associated with constructing and decommissioning the Central Route would be slightly reduced relative to the Proposed Action.

4.21.5.2 Western Route

The Western Route would cause the same types of wildland fire impacts as the Proposed Action Proposed Action, although the location of the impacts associated with the proposed gen-tie route would be shifted to the west relative to the Proposed Action. The Western Route would be longer than for the Proposed Action, resulting in a slightly longer duration for construction and decommissioning and, thereby, a slightly increased potential for accidents or fires to occur. Consequently, the wildland fire-related impacts associated with constructing and decommissioning the Western Route would be slightly increased relative to the Proposed Action.

4.21.6 Alternative 4: No Action Alternative

Under this Alternative, no changes would be implemented on the site and the existing environmental setting described in Chapter 3 would be maintained. The plant communities at the Project site would not be expected to change noticeably from existing conditions and therefore, Alternative 4 would not result in the impacts to wildland fire ecology described for the Proposed Action.

4.21.7 Cumulative Impacts

Incremental impacts of the Project could result in a cumulative effect on wildland fire risk in combination with other past, present, or reasonably foreseeable future actions. For purposes of this analysis, the geographic scope of the cumulative effects analysis for fire resources consists of eastern Riverside County, which includes about 2,800 square miles (about 1,792,000 acres). Although potential fires would not be constrained by political boundaries, the natural conditions and existing fire response infrastructure are such that it would be reasonable to assume that a fire could be contained within this area. Impacts to wildland fire ecology from the Project would be likely for the life of the project, including construction, operations, maintenance, and decommissioning phases which could occur over 40 or more years.

Impacts would include a loss of native vegetation cover within the Project area and a tendency for the area to produce more native and exotic weedy annual vegetation. More worker and vehicle activity in and around the Project would increase the chance of wildfire ignitions. Because the plant communities in the study area are not fire-adapted, increases in fire frequency or size would be detrimental to the area’s ecology. These are all permanent impacts within the context of the life of the Project. Project features such as vegetation treatment, weed management, and worker safety fire precautions would lower the probability of such ignitions. Direct and indirect effects of the Project are analyzed above.

Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. The installation and operation of transmission lines (such as the existing DPV 1 Transmission Line and lines proposed as part of the Project) and the use of equipment (including motor vehicles) that could spark or otherwise provide an ignition source could combine to cause or create a cumulative impact. Additionally, the increased human presence and disturbance caused by the construction, operation and overall development that would occur under the cumulative scenario could advance the rate of invasion by non-native vegetation and, thereby, contribute to fire fuel-loading that would burn with higher flames and hotter temperatures.

Cumulative impacts would vary by Alternative only to the degree to which direct and indirect impacts would vary by Alternative. In this case, the incremental impact of Alternatives 2 and 3 is not expected to vary materially from the Proposed Action, because similar types of construction, operation and maintenance and closure and decommissioning activities would occur. However, to the extent that development of the site for utility-scale power generation would preclude some OHV use, wildfire risks associated with recreational uses would diminish. For the No Action Alternative, wildfire risks would continue to be associated with OHV and other recreational use of the area.

4.21.8 Mitigation Measures

FIRE-1: The Applicant shall prepare and implement a Fire Safety Plan to ensure the safety of workers and the public during Project construction, operation and maintenance, and decommissioning activities. This plan shall complement or supplement provisions of the Applicant’s proposed Emergency Action Plan. The Fire Safety Plan shall be provided to the BLM and RCFD for approval before the Applicant receives a Notice to Proceed (NTP). The Fire Safety Plan shall include, but not be limited to, the following elements:

1. All internal combustion engines used at the Project site shall be equipped with spark arrestors. Spark arrestors shall be in good working order.

2. Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.

3. Fire rules shall be posted on the project bulletin board at the contractor’s field office and areas visible to employees.

4. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.

5. The Applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall easily accessible to personnel.

6. Smoking shall be prohibited in wildland areas and within 50 feet of combustible materials storage, and shall be limited to paved areas or areas cleared of all vegetation.

7. Each Project construction site (if construction occurs simultaneously at various locations) and the proposed solar plant site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.

8. The Applicant shall coordinate with the RCFD to create a training component for emergency first responders to prepare for specialized emergency incidents that may occur at the Project site.

9. All construction workers, plant personnel, and maintenance workers visiting the plant and/or transmission lines to perform maintenance activities shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. Training records shall be maintained and be available for review by the RCFD.

10. Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting and spraying of weeds, in accordance with the Vegetation Management Plan.

11. The BLM and RCFD shall be consulted during plan preparation and fire safety measures recommended by the agencies included.

12. The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations.

13. All on-site employees shall participate in annual fire prevention and response training exercises with the RCFD

14. The Applicant shall designate an emergency services coordinator from among the full-time on-site employees who shall perform routine patrols of the site during the fire season equipped with a portable fire extinguisher and communications equipment. The Applicant shall notify the BLM and County of the name and contact information of the current emergency services coordinator in the event of any change.

15. Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken.

16. Fires ignited onsite shall be immediately reported to BLM FIRE and the RCFD.

17. The engineering, procurement, and construction contract(s) for the proposed project shall clearly state the requirements of this mitigation measure.

4.21.9 Residual Impacts after Mitigation Incorporated

Despite the fire and weed control programs that would be incorporated into the Project, the changes in vehicle use accessing the area for construction, operation, maintenance, and decommissioning would increase the likelihood of wildfires in the Project Area to a slight, but unknown degree. The existing FHSZ classification for this area would likely remain moderate.

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4.22 Additional NEPA Considerations

This section describes the impacts of the Proposed Action and Alternatives on several additional areas of concern under NEPA: livestock grazing, transmission line safety and nuisance, undocumented immigrants, unexploded ordnance, and wild horses and burros.

4.22.1 Applicant Proposed Measures

There are no APMs to address potential effects to the above-listed NEPA considerations.

4.22.2 Transmission Line Safety and Nuisance

4.22.2.1 Methodology for Analysis

This analysis of potential effects of the Proposed Action and alternatives related to Transmission Line Safety and Nuisance assesses the proposal in light of applicable requirements of design-related laws, ordinances, regulations, standards, and policies, including FAA regulations and the Blythe Airport land use compatibility plan. If the gen-tie line and distribution line that would be constructed as components of the Proposed Action and alternatives comply with applicable laws, then the Proposed Action and alternatives would not have a measurable effect related to Transmission Line Safety and Nuisance. Other issues considered include: interference with radio-frequency communication; hazardous shocks; nuisance shocks; and EMF exposure. Impacts related to audible noise from corona discharge are addressed in Section 4.12, *Noise*. Fire hazard-related risks and impacts, including risk of loss, injury or death involving wildland fires sparked by downed lines or other causes, are addressed in Section 4.21, *Wildland Fire Ecology*.

4.22.2.2 Alternative 1: Proposed Action

This analysis focuses on the gen-tie and distribution lines required to serve the Project, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

1. interference with radio-frequency communication;
2. hazardous and nuisance shocks; and
3. EMF exposure.

Interference with Radio-Frequency Communication

The proposed 230 kV gen-tie lines and 12 kV distribution line would be designed, built, and maintained in keeping with standard industry practices that minimize surface irregularities and discontinuities and related corona discharge. Although corona can generate high frequency energy that may interfere with broadcast signals or electronic equipment, this is generally a concern only for lines of 345 kV and above. The IEEE has a design guide that is used to limit conductor surface gradients so as to avoid electronic interference.

Gap discharges or arcs also can be a source of high frequency energy. Gap discharges occur when an arc forms across a gap in loose or worn line hardware. It is estimated that over 90 percent of interference problems for electric transmission lines are due to gap discharges. When identified, gap discharges can be located and remedied by utilities. Although corona or gap discharges related to high frequency radio and television interference impacts would be limited and very localized if they do occur, Mitigation Measure TLSN-1 would reduce the potential for radio frequency interference and provide a mechanism for resolution of any interference complaints.

Hazardous and Nuisance Shocks

Operation of the proposed gen-tie and distribution lines could result in hazardous and/or nuisance shocks. The Applicant would be responsible in all cases for ensuring compliance with regulations and industry standards for grounding-related practices within and near the right-of-way, which would minimize the potential for such shocks.

Electric and Magnetic Field Exposure

Operation of the proposed gen-tie and distribution lines could cause EMF. As discussed in Section 3.22, questions have been raised about EMF and the possibility of deleterious health effects from living near high-voltage lines and about CRT compute monitor interference.

Available evidence as evaluated by the CPUC, CEC, and other regulatory agencies is that a significant health hazard to humans exposed to such fields has not been established (see, e.g., CPUC, 2006). There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe that health-based limits are inappropriate at this time and the industry should continue its current practice of siting power lines to reduce exposure.

The Project site is in an uninhabited open desert land with no existing structures. The proposed gen-tie and distribution line ROW would traverse BLM-administered land and some privately owned and local government-owned land in a largely uninhabited desert area, which has only several residences within 1 mile of the gen-tie line route. The closest residence is approximately 0.6 mile from the proposed gen-tie line, south of I-10. The nearest residence to the proposed solar plant site is approximately 2.6 miles. The general absence of residences in the immediate vicinity of the proposed lines means that there would not be the type of residential field exposure that has been of health concerns in recent years.

Although there is a potential for the Proposed Action to cause CRT computer monitor interference, the proposed gen-tie lines and distribution line would be located on largely uninhabited desert land where computer monitor use is not common. Further, the liquid crystal display (LCD) technology used for portable computer monitors has replaced the CRT technology in most computer monitor applications. Moreover, recognition of computer monitor interference as a problem in the monitor industry has resulted in manufacturers who specialize in shielding enclosures and software programs that adjust the monitor's vertical refresh rate. Other solutions include relocation of the monitor and replacement of CRT monitors with LCD ones.

4.22.2.3 Alternative 2: Reduced Acreage

Alternative 2 is not associated with a particular gen-tie or distribution line; therefore, it would have no impact related to transmission line safety and nuisance.

4.22.2.4 Alternative 3: Reconfigured Gen-tie/Access Road Routes

Central Route

The Central Route would cause the same types of impacts related to transmission line safety and nuisance as the Proposed Action. The Central Route would be slightly shorter than the proposed gen-tie line and access road route. Consequently, this Alternative would result in a slightly smaller area in which such hazards or nuisances could occur. Nonetheless, there would be no substantial difference in transmission line safety and nuisance-related effects between the Central Route and the Proposed Action.

Western Route

The Western Route would cause the same types of impacts related to transmission line safety and nuisance as the Proposed Action. The Western Route would be slightly longer than the proposed gen-tie line and access road route. Consequently, this Alternative would result in a slightly larger area in which such hazards or nuisances could occur. Nonetheless, there would be no substantial difference in transmission line safety and nuisance-related effects between the Western Route and the Proposed Action.

4.22.2.5 Alternative 4: No Action Alternative

Because Alternative 4 would not involve the construction, operation, maintenance, or decommissioning of a transmission line, it would have no impact related to transmission line safety and nuisance.

4.22.2.6 Cumulative Impacts

Incremental impacts of construction, operation, maintenance and decommissioning of the Project could contribute to a cumulative effect on transmission line safety and nuisance when considered in combination with the transmission lines that would serve the cumulative projects described in Section 4.1, including the existing DPV1 Transmission Line and Blythe Energy Project Transmission Line; future or proposed DPV2 Transmission Line Project, and Desert Southwest Transmission Line; and renewable energy projects under construction or proposed along the I-10 corridor. The cumulative impacts area for potential cumulative transmission line safety and nuisance impacts would include the ROW corridors of the proposed gen-tie and distribution lines as described in Section 2.3. The relevant timeframe within which incremental impacts could interact to cause or contribute to cumulative impacts would begin when the proposed lines are energized and would last for as long as the lines remain in place. This time period likely could extend past the point of site closure and decommissioning of the Project because the lines could accommodate power from nearby electricity generation projects to be constructed in the future.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3. Direct and indirect effects of the Project and alternatives are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Due to regulations that limit the allowable proximity of transmission lines to one another and to residences, as described in Section 3.22.1.6, the Proposed Action would not contribute to cumulative impacts related to transmission line safety and nuisance.

Regarding EMF exposure, when field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore cumulative, effects of fields from all contributing conductors. This interaction could be additive or countervailing, depending on prevailing conditions. Because lines constructed, operated, and maintained by all investor-owned utilities (including as SCE) would be subject to EMF management requirements, no significant cumulative effect would result. If no transmission line were developed, pursuit of the alternative would not generate EMF.

4.22.2.7 Mitigation Measures

The following mitigation measures would apply to the construction, operation, and maintenance of any gen-tie line required for the Proposed Action and Alternative 3 to avoid or reduce impacts related to transmission line safety and nuisance:

TLSN-1: The Applicant shall limit the conductor surface electric gradient in accordance with the IEEE Radio Noise Design Guide for High-Voltage Transmission Lines. After energizing the gen-tie line, the Applicant shall respond to and document all radio frequency interference complaints received and the responsive action taken. These records shall be made available to the BLM for review upon request.

4.22.2.8 Residual Impacts after Mitigation Incorporated

After mitigation measure TLSN-1 is implemented, the energized gen-tie lines would not cause effects relating to radio frequency interference that would rise to the level of a nuisance.

4.22.3 Unexploded Ordnance

UXO presents an immediate risk of acute physical injury from fire or explosion resulting from accidental or unintentional detonation. As discussed in Section 3.22, unidentified UXO could be present on the solar plant site or along the proposed linear facilities.

4.22.3.1 Methodology for Analysis

This analysis of the effects of the Proposed Action and alternatives related to UXO relies on review of historical uses of the Project site and proposed linear corridors as well as generally accepted risk information that is readily available from internet sources.

4.22.3.2 Alternative 1: Proposed Action

During construction, operation, maintenance, and decommissioning activities associated with the Proposed Action, land disturbance activities could unearth unexploded World War II-era and more recent vintage munitions, including conventional and unconventional land mines, personnel mines, and bullets, the detonation of which would pose a safety risk to workers on-site. For example, surface and shallow sub-surface UXO could be disturbed by vehicles, workers walking, and/or excavation using shovels or similar hand tools, and deeper sub-surface UXO could be disturbed by the earth movement and excavation processes that would be required for development of the Proposed Action.

With proper training of site workers in the recognition, avoidance, and procedures to be implemented if suspect UXO are discovered, as required by Mitigation Measure UXO-1, the potential risks to workers from encountering UXO would be reduced, but not completely avoided.

4.22.3.3 Alternative 2: Reduced Acreage

Alternative 2 would cause the same types of impacts related to UXO as the Proposed Action, i.e., impacts related to the risk of exposure to UXO during ground-disturbing activities. However, because the solar plant site would be smaller for Alternative 2 than for the Proposed Action, the construction, operation, maintenance, and decommissioning activities associated with Alternative 2 would occur over a smaller area and, thereby, reduce the likelihood of encountering UXO. With proper training of site workers in the recognition, avoidance, and procedures to be implemented if suspect UXO are discovered, as required by Mitigation Measure UXO-1, the potential risks to workers from encountering UXO would be reduced, but not completely avoided.

4.22.3.4 Alternative 3: Reconfigured Gen-tie/Access Road Routes

Central Route

The Central Route would traverse an area with the potential to encounter UXO. It would be slightly shorter than the proposed gen-tie line and access road route. Consequently, this Alternative would have substantially similar, albeit slightly reduced, impacts related to UXO compared to the Proposed Action. With implementation of Mitigation Measure UXO-1, the potential risks to workers from encountering UXO would be reduced but not completely avoided.

Western Route

The Western Route would traverse an area with the potential to encounter UXO. It would be slightly longer than the proposed gen-tie line and access road route. Consequently, this Alternative would have substantially similar, albeit slightly increased, impacts related to UXO compared to the Proposed Action. With implementation of Mitigation Measure UXO-1, the potential risks to workers from encountering UXO would be reduced but not completely avoided.

4.22.3.5 Alternative 4: No Action Alternative

Alternative 4 would result in no change in the baseline level of UXO-related risks because no ground disturbance would occur in connection with the development of the Project, no Project-related increase in the number of people present on the site or within the transmission corridors would occur, and no change in the current types and intensities of use would result.

4.22.3.6 Cumulative Impacts

Any accidental detonation of UXO would be a site-specific event that would not cause or contribute to a cumulative impact.

4.22.3.7 Mitigation Measures

UXO-1: The Applicant shall prepare and implement a UXO Identification, Training, and Reporting Plan to properly train all site workers in the recognition, avoidance, and reporting of military waste debris and ordnance. The Applicant shall submit the plan to the BLM for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

1. A description of the training program outline and materials, and the qualifications of the trainers;

2. Identification of available trained experts that will respond to notification of discovery of any suspected ordnance (unexploded or not);

3. Procedures to stop work immediately in the vicinity of suspected UXO and to notify the local CUPA and the U.S. Army Corps of Engineers;

4. A work plan to recover and remove discovered ordnance, and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near-surface or buried ordnance in all proposed land disturbance areas.

5. Documentation of all surveys and investigations performed to evaluate and remove discovered ordnance.

The Applicant shall submit the UXO Identification, Training, and Reporting Plan to the BLM for approval no less than 30 days prior to the initiation of construction activities at the site or within the linear corridors, as appropriate. The results of geophysical surveys shall be submitted to the BLM within 30 days of completion of the surveys.

4.22.3.8 Residual Impacts after Mitigation Incorporated

Implementation of the Mitigation Measure UXO-1 would reduce, but not avoid potential impacts related to UXO.

4.23 Irreversible and Irretrievable Commitments of Resources

4.23.1 Methodology for Analysis

NEPA requires a discussion of any irreversible or irretrievable commitments of resources which would be involved in a proposal should it be implemented. Resources irreversibly or irretrievably committed to by a proposed action are those used or modified on a long-term or permanent basis. An irretrievable commitment of resources includes activities such as the use of nonrenewable resources like metal, wood, fuel, paper, and other natural or cultural resources. These resources are considered irretrievable in that they would be used or modified by a proposed action when they could have been conserved or used for other purposes. An irreversible commitment of resources includes activities such as the unavoidable destruction of natural resources that could not, or would not, be restored.

4.23.2 Direct and Indirect Impacts

Alternatives 1, 2, and 3 would irreversibly and irretrievably commit resources over the 30-year life of the solar plant. After 30 years, the Project would be decommissioned and the land returned to its pre-Project state. This would indicate that potentially some of the resources used on site could be retrieved. However, 30 years is a long time and many variables could affect the Project over that period. It also is debatable as to how well the site could recover to its pre-Project state once it was decommissioned. Open desert lands and sensitive desert habitats can take a long time to recover from disturbances such as development.

The Project is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over its projected 30-year life, it could contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes. Therefore, this incremental reduction in expending fossil fuels could be a positive effect of the Project’s commitment of nonrenewable resources.

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4.24 Short-term Uses and Long-term Productivity

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9) and the NEPA Guidelines (40 CFR 1502.16) require a discussion of the relationship between short-term uses of the environment resulting from the proposed action or alternatives and the maintenance and enhancement of long-term productivity of the environment.

Short-term uses of the environment resulting from the proposed action or alternatives are described in Chapter 4, *Environmental Consequences.* Some short-term uses could result in temporary adverse impacts to resources such as air quality and therefore will not impact the long-term productivity of the environment. Other short-term uses such as the loss of sensitive desert habitats could adversely affect the long-term productivity of the area. Mitigation measures are proposed to avoid, minimize, or mitigate activities that impact long term productivity.

It also is important to note that the Proposed Action and build alternatives also could provide an environmental benefit by generating electric power with a minimal increase in the use of non-renewable resources such as fossil fuels. Such a benefit could influence the long-term productivity of the environment.

CHAPTER 5
Consultation, Coordination and Public Involvement

5.1 Interrelationships

BLM's authority for the Proposed Action includes FLPMA (43 USC §1701 et seq.), §211 of the EPAct of 2005 (119 Stat. 594, 600), and BLM's Solar Energy Development Policy of April 4, 2007. The FLPMA authorizes BLM to issue ROW grants for renewable energy projects. Section 211 of EPAct 2005 states that the Secretary of the Interior should seek to have approved a minimum of 10,000 MW of renewable energy generating capacity on public lands by 2015.

The BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The Federal Wildland Fire Policy is a collaborative effort that includes the BLM, USFS, NPS, USFWS, Bureau of Indian Affairs, National Biological Service, and state wildlife management organizations. The collaborative effort has formulated and standardized the guiding principles and priorities of wildland fire management. The National Fire Plan is a collaborative interagency effort to apply the Federal Wildland Policy to all federal land management agencies and partners in state forestry or lands departments. Operational collaboration between the BLM, USFS, NPS, and USFWS is included in the Interagency Standards for Fire and Fire Aviation Operations 2003. This federally approved document addresses fire management, wildfire suppression, fuels management and prescribed fire safety, interagency coordination and cooperation, qualifications and training, objectives, performance standards, and fire management program administration.

5.1.1 Department of Defense

BLM coordinates with Department of Defense prior to approval of ROWs for renewable energy, utility, and communication facilities to ensure that these facilities would not interfere with military training routes.

5.1.2 U.S. Army Corps of Engineers

The USACE has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources under Clean Water Act §404. Under that authority, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to the §404 permit requirement. The USACE advised the Applicant by letter dated August 30, 2011, of its determination that no §404 permit would be required for the Project.

5.1.3 California Department of Fish and Game

CDFG protects fish and aquatic habitats within the state through regulation of modifications to streambeds under Fish and Game Code §1602. The BLM and the Applicant have provided information to CDFG to assist that agency in its determination of the impacts to streambeds and the identification of permit and mitigation requirements. The Applicant filed a Streambed Alteration Agreement (SAA) application with CDFG on December 6, 2011. Compliance with the requirements of the SAA would be required to implement the Project.

CDFG also has the authority to regulate potential impacts to species that are protected under the CESA (Fish and Game Code §2050 et seq.). The Applicant has filed the appropriate incidental take permit applications. Compliance with the requirements of any Incidental Take Permit issued under CESA would be required to implement the Project.

5.1.4 California Department of Transportation

Caltrans has jurisdiction over encroachments to Caltrans facilities and related easements and ROWs. Any of the gen-tie lines necessary to serve the Project (i.e., the proposed Eastern Route or either of the gen-tie line/access road route alternatives) would need to cross Caltrans ROW for I-10 in order to connect the Project to the CRS. The Applicant will be responsible for obtaining permission for this crossing and for complying with all relevant Caltrans requirements.

5.1.5 Riverside County

The County of Riverside has jurisdiction to issue a CUP and PUP for those portions of the project proposed on private and County-owned lands. The County also has jurisdiction to issue discretionary approvals for any easements, rights-of-way and/or encroachment permits where County facilities are concerned.

5.2 Consultation Processes for FESA §7, NHPA §106, and Indian Tribes

5.2.1 U.S. Fish and Wildlife Service

The USFWS has jurisdiction over threatened and endangered species listed under FESA (16 USC §1531 et seq.). Formal consultation with the USFWS under FESA §7 is required for any federal action that may adversely affect a federally listed species. Because the MSEP is likely to adversely affect the Mojave desert tortoise (*Gopherus agassizii*), a federally listed threatened species,[1] the BLM is consulting with USFWS under FESA §7. The Project is not located within critical habitat for the desert tortoise, so none would be affected by development of the Project.

The BLM initiated formal consultation with the Service on February 14, 2012, with the submittal of a Biological Assessment (BA) (Tetra Tech EC, Inc., 2012). The BA presents an analysis of the

[1] The desert tortoise also is listed as a threatened species under California law.

effects of the MSEP on the Mojave desert tortoise. It describes the Proposed Action; the environmental setting of the area within which tortoises may be affected by the Proposed Action; the species itself; and potential direct, indirect, and cumulative effects of the Proposed Action on it.

Following review of the BA, the USFWS is expected to issue a Biological Opinion (BO) that will specify reasonable and prudent measures that must be implemented for any protected species. The BO would be included as an Appendix the ROD, and compliance with the measures it contains would be required to implement the Project. It is expected that the measures contained in the BO would be substantially similar to these:

- An Environmental Compliance Manager, Authorized Biologists, and Biological Monitors will be on-site to implement desert tortoise protection measures;
- The Solar Plant Site will be fenced with permanent tortoise exclusion fence per current USFWS guidance;
- The Authorized Biologist and/or approved Biological Monitors will conduct pre-construction clearance surveys for tortoises;
- A Desert Tortoise Translocation Plan approved by the USFWS, BLM, and CDFG will be implemented;
- A Biological Monitor will be present for all construction in unfenced areas or on linear facilities;
- The Project Lead Authorized Biologist will notify the BLM and the UWFWS immediately if a dead or injured desert tortoise is observed and implement approved salvage measures;
- The Applicant will prepare and implement a site-specific Worker Environmental Awareness Program training to inform Project personnel about the biological constraints of the Project;
- Best Management Practices will be employed to avoid unnecessary disturbance, prevent loss of habitat due to erosion, prevent harm to tortoises from vehicles, and avoid or clean up spills of hazardous materials;
- Construction speed limits of 25 miles per hour will be implemented for unpaved access roads;
- Ground excavations outside permanently fenced areas will be inspected for tortoises throughout the workday and monitored by Biological Monitors, and will be filled in, fenced, covered, or otherwise modified at the end of each work day so they are no longer a hazard to desert tortoises and other wildlife;
- Any construction pipe, culvert, or similar structure stored less than eight inches above the ground, stored for one or more nights, and within desert tortoise habitat outside the permanently fenced sites, will be inspected for tortoises before the material is moved, buried, or capped;
- The Applicant will implement measures to ensure that there is no potential for fugitive emissions of hazardous materials from vehicles, and immediately clean up and dispose of

contaminated soil from spills;

- Trash and food items will be contained in secure, closed lid (raven- and coyote-proof) containers to reduce the attractiveness to the site to opportunistic tortoise predators such as common ravens and coyotes;
- All road kills on construction entry roads will be reported to a Biological Monitor, collected, bagged, and put in a secure trash bin, daily;
- The Applicant will prohibit workers from bringing pets or firearms to the Project;
- The Applicant will prohibit the intentional killing or collection of all native plant or native wildlife species, including, but not limited to desert tortoise, and prohibit workers from disturbing, capturing, handling, or moving desert tortoise other animals, or their nests/burrows;
- The Applicant will provide funds to the USWFS' range-wide raven monitoring and control program to support the more comprehensive goals of that program, as well as implement the Raven Management and Control Plan;
- The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area and to native areas surrounding the Project Area;
- The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion;
- The Applicant will prepare and implement a BLM-approved Revegetation Plan to restore temporarily disturbed areas;
- During operation and maintenance, the Applicant will implement conservation measures to avoid disturbance to tortoises;
- The Applicant will provide compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat in accordance with the NECO Plan; and
- The Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase.

5.2.2 NHPA §106 Compliance and Tribal Consultation

The BLM consults with Indian tribes in accordance with several authorities including, for example, NEPA, the NHPA, the AIRFA, and Executive Orders. The California NAHC responded to a project-specific request for input by providing the results of a Sacred Lands File search initiated to determine whether there were any known places of traditional importance in the vicinity of the project as well as a list of local Native Americans who might have concerns about the project area (see PA/FEIS Appendix D Table 2, p. D-5). The BLM utilized and expanded that list and initiated consultation to ensure that ethnographic resources and places of traditional cultural or religious concern are taken into account.

The NHPA Section 106 and government-to-government consultation processes, including summaries of the activities and good faith efforts undertaken by the BLM pursuant to its tribal consultation obligations, are described in more detail below. Individuals from the following 15 federally recognized tribes formally were notified and invited to participate in those processes:

1. Agua Caliente Band of Cahuilla Indians
2. Augustine Band of Cahuilla Indians
3. Cabazon Band of Mission Indians
4. Cahuilla Band of Mission Indians
5. Chemehuevi Indian Tribe
6. Cocopah Indian Tribe
7. Colorado River Indian Tribes
8. Fort Mojave Indian Tribe
9. Fort Yuma Quechan Tribe
10. Morongo Band of Mission Indians
11. Ramona Band of Mission Indians
12. San Manual Band of Mission Indians
13. Soboba Band of Luiseno Indians
14. Torres-Martinez Desert Cahuilla Indians
15. Twenty-Nine Palms Band of Mission Indians

5.2.2.1 NHPA §106 Compliance

Section 106 of the NHPA, as amended, through its implementing regulations (36 CFR Part 800), requires federal agencies to take into account the effects of a proposed undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. Having determined that the project constitutes an "undertaking" as defined in 36 CFR Part 800.16(y) and involves the type of activity that could affect historic properties (36 CFR Part 800.3(a)), the BLM, as lead federal agency for the Project, has a statutory responsibility to comply with provisions of NHPA Section 106 (36 CFR §800.2(a)(2)). Title 36 of the Code of Federal Regulations section 800.1(a) identifies the purposes of the Section 106 process, including the following:

> The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

The steps in the Section 106 process are summarized below.

Step 1: Initiation of the Section 106 Process

The agency official determines whether the proposed federal action is an "undertaking" as defined in 36 CFR §800.16(y) and, if so, whether it could cause effects on historic properties. The agency official also coordinates the steps of the Section 106 process with the overall project schedule and other required reviews, identifies the appropriate State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), plans to involve the public in the Section 106 process, and identifies other appropriate consulting parties to be included in the process. See 36 CFR §800.3.

The area of potential effects (APE) of this project is depicted in the Draft MOA included in PA/FEIS Appendix L. The APE includes the total geographic area or areas within which the project may directly or indirectly cause alterations in the character or use of historic properties as contemplated in 36 CFR §800.16(d). The extent of the APE was influenced by the scale and nature of the project and includes those areas that could be affected by it before, during, and after construction.

The BLM has consulted with the California SHPO for this project. Of the 15 federally recognized tribes invited to participate in the tribal consultation process for this project, only one has assumed the SHPO's responsibilities for Section 106 consultation on tribal lands (16 USCA §470a(d)): the Agua Caliente Band of Cahuilla Indians (NPS, 2012). However, because the Project would not be implemented on the Agua Caliente Band’s tribal lands, the BLM has not consulted with the THPO for this Project; instead, the BLM has consulted with the Agua Caliente Band of Cahuilla Indians just as it has with the other tribes involved in the NHPA Section 106 consultation process.

With respect to planning for public involvement in the Section 106 process, the August 29, 2011, Notice of Intent published in the Federal Register (76 Fed. Reg. 53693) stated that the BLM would use and coordinate the NEPA public participation requirements to assist the agency in satisfying the public involvement requirements under NHPA Section 106 (16 U.S.C. §470(f)); 36 CFR §800.2(d)(3)) and that the information about historic and cultural resources within the APE would assist the BLM in identifying and evaluating impacts to such resources in the context of both NEPA and NHPA Section 106. The BLM also has identified and included the Applicant and Riverside County as other consulting parties. Further, in accordance with the regulations (36 CFR §800.6(a)(1)), the BLM has notified the ACHP regarding the effects of alternatives of the undertaking on historic properties and has invited the ACHP to participate in consultation to resolve the potential effects on historic properties. As indicated in its letter dated March 2, 2012, the ACHP is participating in the process.

Step 2: Identification and Evaluation of Historic Properties

The agency official, with input from the SHPO/THPO, makes a reasonable and good faith effort to identify historic properties (cultural resources) within a project’s APE, reviews existing information on historic properties within the APE, seeks information from consulting parties and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the APE, and evaluates such properties for eligibility to the National Register. See 36 CFR §800.4; see also 36 CFR §800.16(d), defining APE.

To evaluate the eligibility of historic properties in the APE for identification on the National Register, the BLM applies the NRHP criteria for eligibility for listing (36 CFR part 63), in conformance with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 Fed. Reg. 44723-44726). In general, NRHP eligibility criteria include:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics or a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. That have yielded, or may likely yield, information important in prehistory or history.

For this project, the APE is depicted in the Draft MOA included as PA/FEIS Appendix L. As part of the identification and evaluation of historic properties, a literature review, record search, and Class III pedestrian archaeological survey of 6,321 acres that included the entire APE were commissioned to identify historic properties within the APE (see PA/FEIS Appendix D). As described above, an NAHC Sacred Lands File search also was acquired that included a list of tribal individuals to consult regarding the project and its potential effects to sacred sites. No TCPs were identified in the Sacred Lands File, and no TCPs have been identified by tribes to date.

For this project, results of the identification and evaluation efforts for this project are presented in the following reports:

- *Cultural Resources Class III Survey Report for the Proposed McCoy Solar Energy Project, Riverside County, California, prepared AECOM, November 2011;*
- *Results of Archaeological Testing and Evaluation of Site CA-RIV-9696 at the McCoy Solar Energy Project*, Letter report prepared by AECOM, January, 2012;
- *Literature Review for the Native American Ethnographic Assessment for the McCoy Solar Energy Project, Riverside County, California,* prepared by AECOM, June 2012; and
- *Draft Ethnographic Assessment for the McCoy Solar Energy Project, Riverside County, California*, prepared by AECOM, September 2012, currently under review.

Reasonable and good faith efforts undertaken by the BLM, with input from the SHPO, to identify cultural resources within the APE are summarized in Table 5-1, including written correspondence, meetings for the purposes of information and idea exchange, cultural resource-focused site visits, and responses to information requests. Individual government-to-government meetings separate from the Section 106 process are discussed below and included in Table 5-1.

TABLE 5-1
SIGNIFICANT EVENTS IN THE NHPA SECTION 106 AND GOVERNMENT-TO-GOVERNMENT CONSULTATION PROCESS

Date	Type	Content
August 17, 2011	Initial letter from BLM	Sent to chairpersons of the 15 tribes listed in Section 5.2.2.
November 4, 2011	Response letter from Agua Caliente Band of Cahuilla Indians	The letter expressed the Tribe's interest in consultation and identified representatives for Section 106 and government-to-government consultation.
November 16, 2011	Follow-up calls from BLM	Calls to contacted tribal chairpersons and cultural staff regarding the initial letter.
January 23, 2012	Site visit invitation letter from BLM	Sent to chairpersons and other staff to organize site visit.
January 31, 2012	Findings letter from BLM	Sent to chairpersons and other staff to advise about and seek input on the agency proposed determinations of eligibility and findings of effect to historic properties for the Project.
February 8, 2012	Site visit	Visit to Project Site.
February 8, 2012	Response letter from Fort Yuma Quechan Tribe	The letter expressed the Tribe's interest in consultation and identified a representative for Section 106 consultation.
February 22, 2012	Response letter from Soboba Band of Luiseno Indians	The letter expressed the Tribe's interest in consultation.
March 8, 2012	Response letter from Cahuilla Band of Mission Indians	The letter expressed the Tribe's interest in consultation and identified a representative for Section 106 consultation.
April 2, 2012	MOA meeting letter from BLM	Sent to invite chairpersons and other staff to meeting to address MOA.
April 24, 2012	Follow-up calls from BLM	Calls to contacted tribal chairpersons and cultural staff regarding the MOA meeting letter.
April 26, 2012	Section 106 meeting	Attended by representatives from Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cahuilla Band of Mission Indians, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma Quechan Tribe, and Torrez-Martinez Desert Cahuilla Indians.
May 2, 2012	Letter from Fort Yuma Quechan Tribe	Request for ethnographic study.
May 8, 2012	Government-to-government meeting	Meeting of BLM staff and Soboba Band of Luiseno Indians representatives
May 16, 2012	Site visit	Visit to Project Site with representatives from the Augustine Band of Cahuilla Indians and the Cocopah Indian Tribe.
June 26, 2012	Ethnographic information letter from BLM	Sent to chairpersons and other staff to solicit input on upcoming ethnographic study.
July 26 and 30, 2012	Letter from Colorado River Indian Tribes and Fort Yuma Quechan Tribe	Comments received on ethnographic work plan.
August 22, 2012	Letter from Soboba Band of Luiseno Indians	Comments received on Draft PA/EIS.
August 24, 2012	Final ethnographic work plan letter from BLM	Sent to chairpersons and other staff to advise about and seek input on final ethnographic work plan.
September 17, 2012	Draft MOA and meeting letter from BLM	Sent to chairpersons and other staff to transmit the draft MOA to the Tribes for review and comment and to invite the Tribes to attend the Section 106 meeting on October 10, 2012.
September 18, 2012	Letter from Soboba Band of Luiseno Indians	Requested government-to-government consultation meeting.

TABLE 5-1 (Continued)
SIGNIFICANT EVENTS IN THE NHPA SECTION 106 AND GOVERNMENT-TO-GOVERNMENT CONSULTATION PROCESS

Date	Type	Content
October 1, 3, and 4, 2012	Follow-up calls from BLM	Calls to contacted tribal chairpersons and cultural staff regarding the Draft MOA and meeting letter.
October 10, 2012	Section 106 meeting	Attended by representatives from Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Colorado River Indian Tribes, Fort Mojave Indian Tribe, San Manuel Band of Mission Indians, Soboba Band of Luiseno Indians, and Twenty-Nine Palms Band of Mission Indians.
October 31, 2012	Staff meeting	Meeting of BLM staff and Fort Yuma Quechan Tribe representatives
November 5, 2012	Staff meeting	Meeting of BLM staff and Colorado River Indian Tribes representatives

Step 3: Assessment of Effects

The agency official determines whether the project will affect historic properties listed in or eligible for the National Register. See 36 CFR §800.4(d). If the BLM finds that either there are no historic properties present or there are historic properties present but the project will have no effect upon them, then the agency official provides documentation of this finding to the SHPO/THPO, notifies all consulting parties, and makes the documentation available for public inspection. Alternatively, if the BLM finds that historic properties may be affected, then the agency official notifies all consulting parties and invites their views on the effects and assessment of adverse effects. See 36 CFR §800.5, Assessment of Adverse Effects.

In this context, “effect” is defined as “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register” (36 CFR §800.16(i)). An adverse effect results if the project “may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association” (36 CFR §800.5(a)(1)).

To date, the Section 106 consultation process has resulted in the identification and evaluation of 114 archaeological sites; no tribally identified traditional cultural property (TCP) has been identified within the APE. Each of the sites is described in the Draft MOA attached as PA/FEIS Appendix L. Of these, the nine archaeological sites that are designated CA-RIV-2486, CA-RIV-3419, CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, CA-RIV-10246, and CA-RIV-10222 have been determined eligible for inclusion in the National Register in consultation with SHPO. Of these nine, the BLM has determined that the Agency Preferred Alternative would have an adverse effect on the seven archaeological sites that are designated CA-RIV-10194, CA-RIV-10225, CA-RIV-10240, CA-RIV-10242, CA-RIV-10245, CA-RIV-10246, and CA-RIV-10222. The BLM has provided these determinations to the consulting parties and to the tribes.

TABLE 5-2
ARCHEOLOGICAL SITES DETERMINED ELIGIBLE FOR LISTING ON THE NATIONAL REGISTER THAT WOULD BE ADVERSELY AFFECTED BY ALTERNATIVES UNDER CONSIDERATION

Archaeological Site	Determined Eligible for Inclusion on the National Register?	Would be Adversely Affected by the Alternatives under Consideration?
CA-RIV-2486	Yes	No
CA-RIV-3419	Yes	No
CA-RIV-10194	Yes	Yes
CA-RIV-10225	Yes	Yes
CA-RIV-10240	Yes	Yes
CA-RIV-10242	Yes	Yes
CA-RIV-10245	Yes	Yes
CA-RIV-10246	Yes	Yes
CA-RIV-10222	Yes	Yes

Step 4: Resolution of Adverse Effects

Through consultation with the SHPO/THPO, Indian tribes, and consulting parties, the BLM seeks to resolve the potential adverse effects of a project by developing and evaluating alternatives or modifications to the project that could avoid, minimize, or mitigate adverse effects on historic properties and documenting the result in a Memorandum of Agreement (MOA) or Programmatic Agreement (PA) (36 CFR §800.6). The BLM must notify the ACHP of its adverse effect determination and intention to resolve such adverse effects through an MOA or PA and invite the ACHP to participate. As described above, the ACHP is participating in the development of the MOA for this project.

The current Draft MOA, provided in PA/FEIS Appendix L, anticipates that the agreement will be executed by the following signatory parties: the BLM, the California SHPO, and the ACHP. Other consulting parties include the Applicant and Riverside County.

Upon receipt of the MSEP plan of development (POD), the BLM followed the consultation requirements outlined within the State Protocol Agreement among the California State Director of the BLM and the California and Nevada State Historic Preservation Officers (BLM-SHPO, 2007). Consultation was formally initiated by the BLM by letter on January 31, 2012, that stated the BLM’s conclusion that the MSEP had reached a level of complexity that extended beyond the scope of the Statewide Protocol Agreement and stated its desire to initiate formal consultation. The letter also summarized the proposed project, the status of the PA/EIS, the status of cultural resource studies, and the status of consultation with Indian tribes.

A copy of the draft Section 106 MOA, which outlines the agency’s effects determinations and proposed measures to resolve the adverse effects, is included as PA/FEIS Appendix L. The BLM is continuing to consult with consulting parties and tribes on the Draft MOA. The MOA will be finalized and executed prior to the issuance of a Record of Decision for the project. Execution of the MOA will conclude the Section 106 process.

The MOA for the MSEP will include avoidance, protection, and mitigation measures to respond to the concerns expressed by Indian tribes. For example, the Draft MOA included in PA/FEIS Appendix L includes a draft Historic Properties Treatment Plan, which describes in further detail measures to resolve and minimize adverse effects should the project be approved. Additionally, to address the concerns related to the discovery of previously unidentified cultural resources during construction, the Draft MOA would imposes a robust construction monitoring plan that provides for tribal participation, as well as a draft NAGPRA Plan of Action to ensure the proper treatment and protection of prehistoric human remains should any be discovered. The Draft MOA also provides for the funding and the development of a Long Term Management Plan to provide for post-construction archeological resource monitoring in response to concerns regarding the potential for degradation associated with increased access.

5.2.2.2 Tribal Consultation

The BLM is responsible for government-to-government consultation with federally recognized Indian tribes as part of the NHPA Section 106 process described above (36 CFR §800.2(c)(2)(ii)) as well as in accordance with Executive Order 13175, Executive Order 13007, and the Presidential memorandum of April 29, 1994, entitled "Government-to-Government Relations with Native American Tribal Governments." Executive Order 13175 was signed on November 6, 2000. Among its fundamental principles, Executive Order 13175 recognizes the inherent sovereign powers of Indian tribes as domestic dependent nations, and the United States' continued work with tribes on a government-to-government basis to address issues concerning tribal trust resources and other concerns before taking actions that could have substantial direct effects on one or more federally recognized Indian tribes. Executive Order 13007, originally signed on May 24, 1996, was updated on April 30, 2000. Intended to protect and preserve Indian religious practices, Executive Order 13007 requires federal agencies, to the extent practicable, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sites. To implement the Order, agencies are to provide reasonable notice of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites. The Presidential memorandum of April 29, 1994, outlines certain principles to be followed by federal agencies as part of their government-to-government interactions with Native American tribal governments, including that agencies are to assess the impact of their actions on tribal trust resources and to assure that tribal government rights and concerns are considered during the development of plans, projects, programs, and the like.

The BLM initiated consultation on a government-to-government basis at the earliest stages of planning for this project by formally notifying and inviting the 15 federally recognized tribes identified above to participate in the process on August 17, 2011, prior to the publication of the Notice of Intent to prepare the Draft PA/EIS. The BLM reaffirmed its commitment to government-to-government consultation in the August 29, 2011 Notice of Intent (76 Fed. Reg. 53693), which stated that the BLM would "consult with Indian tribes on a government-to-government basis in accordance with Executive Order 13575 and other policies" and further stated that "Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, will be given due consideration." These notices, independently and together with other notices about the project, provided reasonable notice as contemplated by Executive Order 13007 of the Proposed Action and alternatives to the Proposed Action, the approval of which could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

While the Section 106 consulting party group meetings provide a forum for providing project updates, presenting the results of cultural resources studies, and openly discussing and sharing ideas about information and concerns about the project, individual government-to-government meetings with Indian tribes provide a separate forum for tribes to share information and concerns openly and candidly in an individual context, apart from other consulting parties and about other issues not necessarily related to the Section 106 process. To supplement the activities good faith efforts made by the BLM pursuant to NHPA Section 106, individual meetings and other efforts were undertaken by the agency as part of the government-to-government consultation process. These efforts are summarized above in Table 5-1

Information and major concerns brought to light through correspondence and shared during group and individual meetings with tribes, as well as the actions that have been undertaken during the consultation process to address tribal concerns, are summarized below. All written communications submitted to the BLM by tribal officials is available in their entirety as part of the formal administrative record for the project.

5.3 Implementation, Monitoring, and Enforcement

5.3.1 Implementation

The BLM will continue to involve and collaborate with the public during the implementation of the Proposed Action if it is approved. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. Citizens and user groups within the vicinity of the Project are invited to become actively involved in implementation, monitoring, and enforcement of decisions. The BLM and citizens could collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

5.3.2 Monitoring

The BLM would monitor activities throughout the life of the Proposed Action to ensure that decisions are implemented in accordance with the approved ROD and ROW grant. Monitoring would be conducted to determine whether decisions, BMPs, and approved mitigation measures are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

5.3.3 Enforcement and Adaptive Management

Adaptive management has been incorporated into the mitigation measures adopted for the Proposed Action. Adaptive management is a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. Procedures include:

1. Determining environmental effects of a project and identifying mitigation needs along with other permitting and regulatory requirements. Analysis should indicate where data are lacking and uncertainty exists with respect to the intended outcomes and the significance of this lack (see 40 CFR §1502.22);
2. Monitoring designed for adaptive management must be able to result in appropriate adjustments in project activities as the project is constructed and planned mitigation is installed;
3. Striving to ensure public input into and understanding of the principles of adaptive management;
4. Maintaining open channels of information to the public and affected regulatory and permitting agencies during the application of adaptive management, including transparency of the monitoring process that precedes adaptive management and the decision-making process that implements it. This involves: (a) identifying indicators of change, (b) assessing monitoring activities for accuracy and usefulness, and (c) making changes in tactics, activities and/or strategies; and
5. Providing post-activity opportunity for public and affected outside agency review of adaptive management practices, including practices that were exceptions to any resource management plans or that had permitting and other regulatory requirements not satisfied by prior coordination.

Adaptive management allows agencies, in their environmental reviews, to establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective.

5.4 Scoping

A Notice of Intent to prepare this PA/EIS was published in the *Federal Register* (Volume 76, No. 167) on August 29, 2011. The BLM held publicly noticed scoping meetings on September 20, 2011, at the University of California-Riverside, Palm Desert Campus and on October 19, 2011, in the Blythe City Council Chambers. The Final Scoping Report is included as Appendix B.

The BLM also established a website that describes the Project, the process, and various methods for providing public input, including the phone number where the BLM's Project Manager for the Project (Jeff Childers) may be reached, physical addresses where Project documents may be reviewed, and an e-mail address where comments may be sent electronically: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/McCoy.html.

5.5 Public Comment Process

The BLM distributed the Draft PA/EIS for the MSEP for public and agency review and comment on May 25, 2012 (77 Fed. Reg. 31355-02). The comment period ended August 23, 2012. Twenty-one comment letters were timely received; one letter was received after the close of the comment period. Responses to all 22 letters are provided in this PA/FEIS. Section 5.5.1 describes the format and organization of the comments received on the Draft PA/EIS and the responses to those comments. Section 5.5.2 provides a list of the comment letters received on the Draft PA/EIS from members of the public, agencies, and organizations. Section 5.5.3 provides consolidated responses (called "Common Responses") for topics on which a number of similar and related comments were received. Individual responses to each individual comment are provided in Appendix K.

5.5.1 Format of the Responses to Comments

The comments received on the Draft PA/EIS are organized generally in the order in which they were received. Each comment letter has been assigned a number. For example, the first letter received was submitted by the Mojave Desert Air Quality Management District: it is Letter 1. Individual comments within each comment letter are signified by a combination of the letter number and comment number as individually delineated along the right-hand margins of the letters. For example, the first comment in the letter submitted by the Mojave Desert Air Quality Management District is designated Comment 1-1. Comment letters are provided in Appendix J; in them, individual comments are delineated. Responses to individual comments are provided on a letter-by-letter basis in Appendix K.

5.5.2 Index of Comments Received

Table 5-3 lists the agencies, organizations, and individuals that provided written comments on the Draft PA/EIS. As described above, each comment letter and comment bears a unique identifier.

5.5.3 Common Responses

A number of the comments received on the Draft PA/EIS discussed the same issues or environmental concerns. In accordance with the BLM NEPA Handbook (Section 6.9.2.2), similar comments may be summarized and one response given to each group of similar comments. The common issues and responses identified here and set forth below include:

Common Response 5.5.4.1: Purpose and Need and Alternatives

Common Response 5.5.4.2: Clarifications of the Proposed Action

Common Response 5.5.4.3: Lack of Demonstrated Groundwater Connectivity with the Colorado River

Common Response 5.5.4.4: Recirculation

TABLE 5-3
COMMENT LETTERS RECEIVED ON THE MCCOY SOLAR ENERGY PROJECT DRAFT PA/EIS

Comment Letter	Commenter	Letter Available in Appendix J, Page
1	Mojave Desert Air Quality Management District, Alan J. Salvio, Supervising Air Quality Engineer	J-3
2	The Dean Family	J-4
3	Department of Toxic Substances Control, Al Samhi, Brownfields and Environmental Restoration Program	J-5
4	Palo Verde Valley Irrigation District, Roger Henning, Chief Engineer	J-9
5	Riverside County Transportation Department	J-14
6	Basin and Range Watch, Kevin Emmerich and Laura Cunningham	J-15
7	Jared Fuller	J-34
8	Californians for Renewable Energy and La Cuna de Aztlan Sacred Sites Protection Circle Advisory Committee, Mekaela M. Gladden, Briggs Law Corporation	J-35
9	NextEra Energy Resources, LLC, Scott A. Busa, Executive Director, Business Development (Applicant)	J-61
10	Soboba Band of Luiseño Indian's, Joseph Ontiveros, Cultural Resource Director	J-109
11	California Unions for Reliable Energy, Rachael E. Koss, Adams Broadwell Joseph & Cardozo	J-114
12	Center for Biological Diversity, Ileene Anderson, Biologist/Desert Program Director	J-184
13	Colorado River Indian Tribes, Merving Scott, Jr., Secretary	J-192
14	Laborers International Union of North America, Local Union No. 1184, Gideon Kracov of Gideon Kracov, Attorney at Law	J-209
15	Metropolitan Water District of Southern California, Deirdre West, Manager, Environmental Planning Team	J-610
16	Renewable Resources Group, Inc., Barbara J. Schussman, Perkins Coie	J-617
17	United States Environmental Protection Agency Region IX, Enrique Manzanilla, Director, Communities and Ecosystems Division	J-621
18	United States Fish and Wildlife Service, Assistant Field Supervisor, Palm Springs Fish and Wildlife Office	J-634
19	Colorado River Board of California, Christopher S. Harris, Acting Executive Director	J-638
20	U.S. Department of the Interior, Bureau of Reclamation, Steven C. Hvinden, Chief, Boulder Canyon Operations Office	J-645
21	La Cuna de Aztlan Sacred Sites Protection Circle Advisory Committee, Alfredo Acosta Figueroa, Elder/Historian/Sacred Sites Monitor	J-647
22	Defenders of Wildlife, Natural Resources defense Council, Sierra Club, The Wilderness Society, and Audubon California, (multiple signatories)	J-659

Each section below lists the comment letter and number code for each comment for which the common response applies.

5.5.3.1 Common Response 1: Purpose and Need and Alternatives

Commenters and Comments Addressed

Commenter	Comments
Basin and Range Watch	6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8, and 6-46
Jared Fuller	7-3 and 7-5
CARE and La Cuna	8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 8-60, and 8-65
CURE	11-125, 11-126, 11-127, 11-128, 11-129, 11-130, and 11-131
Colorado River Indian Tribes	13-5, 13-34, and 13-35
LIUNA	14-8
USEPA Region IX	17-3 and 17-9
USFWS	18-6
La Cuna	21-21
Defenders of Wildlife, et al.	22-1, 22-16, 22-17, 22-18, 22-19, 22-20, 22-21, and 22-22

Summary of issues Raised

1. Concerns that the BLM's statement of Purpose and Need is too narrow.

2. Suggestions that alternative renewable energy generation technology, distributed generation, conservation and demand-side management, and siting alternatives should be considered.

Response

As explained in Section 6.2.1 of the BLM's NEPA Handbook, a carefully crafted purpose and need statement can "increase efficiencies by eliminating unnecessary analysis and reducing delays in the process." The statement of purpose and need dictates the range of alternatives, because action alternatives are not "reasonable" if they do not respond to the purpose and need for the action.

Purpose and Need

The BLM's purpose and need statement describes the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action (BLM NEPA Handbook Section 6.2). As correctly noted in several comments, the narrower the purpose and need statement, the narrower the range of alternatives that must be analyzed; the converse also is true. BLM has considerable discretion in defining the purpose and need of the proposed action (40 CFR 1502.13). Multiple comments requested that the BLM substantially expand its statement to address more broad (and less specific) purposes in order to allow for consideration of a broader range of alternatives.

In accordance with FLPMA Section 103 (c), the BLM manages public lands for multiple use in a manner that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501 (a)(4)). In responding to a ROW grant application under this authority, the BLM may decide to deny or grant a requested ROW, or to grant the ROW with modifications. Modifications may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1).

As directed by Secretarial Order 3285, the BLM has identified renewable energy projects on federally managed lands as a priority use of the lands it manages. As a result, the BLM is considering ROW grants for various renewable energy projects throughout California and other western states. Each of these projects is considered by the BLM on its own merits and with consideration of the impacts of the specific project on a specific site.

Consistent with FLPMA, the BLM relies on project proponents to identify renewable energy technologies and general project locations and configurations that are technically and economically viable given current market conditions, renewable portfolio standards, technological advancements, transmission access, and related considerations. Through pre-application and NEPA processes for such projects, the BLM works with applicants, stakeholders, and other federal land and resource management agencies to refine proposals and help identify possible alternate locations that conform with applicable federal laws, regulations, policies, and land use plans.

BLM's purpose and need, as stated in Section 1.2.1 of the PA/FEIS, is based on two key considerations: (i) the potential action the BLM could or would take on the specific proposed action; and (ii) the response of the BLM in meeting specific directives regarding the implementation of renewable energy projects on federally-managed lands. The primary action that BLM is considering is a response to a specific ROW grant application from the Applicant to construct and operate a specific solar technology on a specific site managed by the BLM. As a result, the BLM determined that a key purpose of this project is to determine whether to approve, approve with conditions, or deny that ROW application for the MSEP (Alternative 1). The BLM also considered a reduced acreage alternative, which would deviate from the features common to all action alternatives in that its solar plant would consist solely of Unit 1 (Alternative 2); reconfigured gen-tie/access road alternatives, including a central route and a western route (Alternative 3); and a no action alternative (Alternative 4) (see PA/FEIS Chapter 2).

The BLM acknowledges that the Applicant has specific objectives and constraints for the project; these are set forth in section 1.2 of the Applicant's POD. While the agency has reviewed and is aware of the Applicant's objectives and constraints, it has not relied upon them to define the statement of its own (public) purpose and need, which is provided in PA/FEIS Section 1.2.1. In support of this point, a few of the alternatives carried forward for detailed consideration would not accomplish the Applicant's project objectives. For example, Alternative 2, Reduced Acreage Alternative, which would have a 250 MW capacity; by comparison, section 1.2 of the POD states that the Applicant's "purpose of the Project is to provide between 500 and 750 MW of renewable solar energy.…"

The BLM believes that the purpose and need for the MSEP, as discussed in PA/FEIS Chapter 1, is reasonable, consistent with governing directives and the requirements of Title V of FLPMA, and satisfies the requirements of NEPA. Therefore, the purpose and need for this project was not revised in response to these comments.

Alternatives

Although the PA/FEIS takes into account new information about potential alternatives, including contaminated sites identified by the EPA as potentially suitable for utility-scale solar development and distributed generation, the BLM has determined that such information does not require “supplementation” as defined under NEPA (40 CFR 1502.9).

Brownfields / Degraded Lands Alternative. Multiple comments on the Draft PA/EIS suggested that the BLM should site utility-scale renewable energy projects on potentially contaminated “brownfield” lands, lands where the effects on sensitive resources would be reduced, or lands that have been previously disturbed or developed. These suggestions are considered, and relevant analysis provided, in Section 2.9.2.1.3.

Distributed Generation. Multiple comments on the Draft PA/EIS suggested that the BLM should evaluate the distributed generation of solar energy resources as opposed to centralized, large-scale proposals like the MSEP. As described in PA/FEIS Table 2-12, distributed solar technology uses small, modular power generators, typically up to 50MW, located at or near customer demand. The BLM considered distributed generation as an alternative to the proposed project, but eliminated it from detailed analysis because it would not meet the BLM’s purpose and need to respond to an application for a utility-scale PV generation facility (PA/FEIS Table 2-12). Further, while the BLM recognizes the importance of distributed generation, reports show that a combination of distributed generation, utility-scale solar projects and other efforts will be needed to meet established goals for renewable energy development in California. See, for example, the California Energy Commission’s December 2011 report entitled *Renewable Power in California: Status and Issues*, which reports that approximately 3,000 MW of distributed generation capacity installed as of 2011 and, if existing state programs to support distributed generation are fully successful, California could add 6,000 MW of additional capacity in the next 5 to 8 years, “leaving a gap of roughly 3,000 MW that may require additional programs or incentives” (CEC, 2011).

Further, the applicable federal orders and mandates providing the drivers for the BLM’s consideration of the proposed ROW application and related CDCA Plan amendment compel the BLM to evaluate utility-scale solar energy development. As discussed in PA/FEIS Section 1.2.1, Secretarial Order 3285A1 requires the BLM to undertake multiple actions to facilitate large-scale solar energy production. Accordingly, the BLM’s purpose and need for agency action in this PA/FEIS is focused on the siting and management of the proposed utility-scale solar energy development within the requested ROW (see PA/FEIS Section 1.3).

Conservation and Demand Side Management. Multiple comments on the Draft PA/EIS suggested that the BLM should evaluate conservation and demand side management as an alternative to the project. As described in PA/FEIS Table 2-12, the BLM considered conservation and demand side management as an alternative to the proposed project, but eliminated it from detailed analysis similar to a distributed generation alternative because it would not meet the BLM's purpose and need and because it alone is not sufficient to address all of California's energy needs in light of population growth and increasing energy demands (PA/FEIS Table 2-12).

Non-federal Land Alternatives, including the Palo Verde Mesa Solar Project Site. As discussed in PA/FEIS Section 2.9.2.1.1, an all-private land alternative was investigated. However, it was not carried forward for detailed evaluation because no private parcels or combinations of parcels of sufficient size were available that met the Applicant's minimum project requirements. Multiple comments identified the Renewable Resources Group's approximately 3,400-acre Palo Verde Mesa Solar Project site as a potential alternative to the MSEP; however, as described in See Section 2.9.2.1.1, *Private Land Alternatives, including the Palo Verde Mesa Solar Project Site*, that project is separate from and independent of the MSEP, and its impacts are potentially cumulative with the effects of the MSEP. For these reasons, the Palo Verde Mesa Solar Project Site does not present an alternative to the MSEP.

5.5.3.2 Common Response 2: Clarifications of the Proposed Action

Commenters and Comments Addressed

Commenter	Comments
CURE	11-132
Center for Biological Diversity	12-3, 12-4, and 12-6
Defenders of Wildlife, et al.	22-15

Summary of issues Raised

Multiple comments suggest that the BSPP and MSEP, because they currently are owned by the same parent company, should be analyzed together as connected actions in one environmental review document.

Response

The BSPP and MSEP are distinct projects and not connected actions or similar actions under the regulations implementing NEPA; the impacts of each of these project are considered together only in the cumulative context. Section 6.5.2.1 of the BLM's NEPA Handbook explains that connected actions "are those actions that are 'closely related' and 'should be discussed' in the same NEPA document (40 CFR 1508.25 (a)(1)). Actions are connected if they automatically trigger other actions that may require an EIS; cannot or will not proceed unless other actions are taken previously or simultaneously; or if the actions are interdependent parts of a larger action and depend upon the larger action for their justification (40 CFR 1508.25 (a)(i), (ii), (iii)).

Multiple comments suggest that the BLM must evaluate the MSEP and the BSPP in a single EIS because they are "connected actions" because each currently is owned by NextEra and because, if approved, the two projects could share some facilities. However, this is not the test to determine whether multiple actions are so connected as to require consideration in a single EIS. Instead, the BLM applies an "independent utility" test: if each project reasonably could have been completed without the existence of the other, they have "independent utility" and so are not "connected" for purposes of NEPA. See, e.g., *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 969 (9th Cir. 2006). Under this test, the BSPP and the MSEP are not connected. To the contrary, they have been, are, and will remain separate projects, wholly independent of one another.

In October 2010, Solar Millennium Inc./Solar Trust of America LLC received BLM approval to build the Blythe Solar Power Project (BSPP), a 1,000 MW concentrated solar thermal power project; however, the company filed for bankruptcy protection on April 2, 2010, before construction was complete. On June 21, 2012, the U.S. Bankruptcy Court in Wilmington, Delaware, held an auction for the bankrupt company's assets where NextEra Blythe Solar Energy Center, LLC (NextEra Blythe), a wholly owned subsidiary of NextEra Energy Resources, was selected as the highest bidder for and thereafter became the owner of the BSPP. NextEra is expected to pursue agency approvals to develop the BSPP as a PV solar project rather than as a concentrated solar thermal one. However, a change in the project of this magnitude will require supplemental approvals from the BLM as well as from the California Energy Commission (CEC)[2] and other agencies. For the BLM, this means a new SF-299 will need to be filed along with a POD describing the new proposal. Supplemental environmental review will be required, and a new ROD must issue before NextEra could proceed with its plans for the BSPP site.

McCoy Solar, LLC, a subsidiary of NextEra Energy Resources, LLC, filed its original application for the MSEP on January 29, 2007 and then revised it multiple times before proposing the configuration for which an NOI was issued on August 29, 2011. The analytical baseline for purposes of evaluating potential effects of the MSEP is the date of the NOI: August 29, 2011. At that time, the BSPP was an approved project owned by a different entity, for which construction had begun. But for the bankruptcy, construction of the BSPP could have proceeded to operation. NextEra's project, the MSEP, was and remains a wholly independent undertaking that, if approved, would not trigger or require any action on the BSPP site and would go forward regardless of whether existing approvals for the BSPP are amended.

The BSPP is identified as a cumulative project in the PA/FEIS for the MSEP, and the potential for similar impacts of the BSPP and MSEP to combine to cause or contribute to cumulative effects is analyzed in the resource-specific cumulative effects sections throughout Final PA/EIS Chapter 4. See, for example, PA/FEIS Table 4.1-1, Cumulative Scenario, regarding geology and soils, lands and realty, noise, recreation and public access, visual resources, surface water, groundwater, and aviation safety.

[2] An application to initiate the state approval amendment process for the project has been submitted. See, Palo Verde Solar I, LLC, 2012. Blythe Solar Power Project, Petition to Amend, Conversion to PV.

5.5.3.3 Common Response 3: Lack of Demonstrated Groundwater Connectivity with the Colorado River

Commenters and Comments Addressed

Commenter	Comments
Palo Verde Irrigation District	4-3, 4-4, 4-5, 4-9, and 4-14
CARE and La Cuna	8-51
CURE	11-121 and 11-124
Metropolitan Water District	15-2, 15-3, and 15-4
US Environmental Protection Agency	17-5, 17-13, and 17-14
Colorado River Board	19-1, 19-2, 19-3, and 19-4
US Bureau of Reclamation	20-1, 20-2, and 20-3

Summary of issues Raised

1. Requests for clarification of potential connectivity of the Colorado River to mesa groundwater.

2. Questions about whether Colorado River water entitlements would be required for construction, operation, maintenance, and decommissioning of the Project and, if so, information provided about the availability and sources of such entitlements.

3. Suggestions that the accounting surface methodology of determining impacts to the Colorado River should apply.

Response

The BLM's understanding of potential impacts to Colorado River Water from Project-related groundwater pumping and the potential need for an entitlement for Colorado River water has not changed since the publication of the Draft PA/EIS. In Draft PA/EIS Section 3.20 (p. 3.20-7), the BLM determined that available data do not substantiate the hypothesis from 2009 that groundwater from the Colorado River could potentially flow through the PVVGB to the PVMGB; to the contrary, 2011 data indicated relatively stable groundwater levels over time, which suggests very little change of groundwater in storage. In addition, the 2011 data indicated that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB due to recharge of water from the Colorado River. See also revisions made to Section 3.20 of the Draft PA/EIS (PA/FEIS, p. 3.20-7) in response to comments received from the Palo Verde Irrigation District, including Comment 4-5 ("Underflow from the Colorado River should be zero since PVID's drains prevent that underflow from occurring.") and Comment 4-9 ("no water flows directly from the Colorado River past our series of drains to reach the mesa groundwater. This was confirmed by a Bureau of Reclamation Study in 1986.").

Because there is no subsurface connectivity between the Colorado River and mesa groundwater, groundwater pumped as part of the Project would not be replaced by Colorado River water, and so would have no impact on the Colorado River. For the same reason, no entitlement to Colorado

River water would be needed from MWD or any other purveyor to construct, operate, maintain, or decommission the Project.

In any event, the BLM has thoroughly reviewed the regulatory framework regarding the use of the accounting surface methodology of determining impacts to the Colorado River as well as other resources, including USGS Scientific Investigation Report 2008-5113, and has determined that even if Colorado River water could be affected by Project-related pumping, no formal regulation exists that requires the Applicant to acquire an allocation at this time. The Bureau of Reclamation has not finalized its rule on the accounting surface methodology for the Colorado River. Should a rulemaking ever be finalized on the proposed accounting surface, the BLM will work with the Applicant to ensure that appropriate processes are followed to obtain such an allocation.

5.5.3.4 Common Response 4: Recirculation

Commenters and Comments Addressed

Commenter	Comments
CURE	11-1, 11-7, 11-8. 11-12, 11-60, and 11-134
Center for Biological Diversity	12-21
LIUNA	14-2 and 14-18
Defenders of Wildlife, et al.	22-22

Summary of issues Raised

Comments suggest that the Draft PA/EIS be supplemented and recirculated for a variety of reasons.

Response

Agencies apply a “rule of reason” in deciding whether to prepare and circulate a supplemental EIS. On one hand, new information that emerges after the circulation and public comment period of a Draft EIS may be included in the Final EIS without recirculation. *Marsh v. Oregon Natural Resources Council* (1989) 490 U.S. 360, 373 (“an agency need not supplement an EIS every time new information comes to light after the EIS is finalized”). On the other hand, supplemental analysis must be prepared when there are substantial changes in the proposed action relevant to environmental concerns or when significant new circumstances or information relevant to environmental concerns (40 CFR §1502.9(c)(1); BLM NEPA Handbook §5.3).

No substantial changes relevant to environmental concerns have been made to the Proposed Action since the Draft PA/EIS was circulated. The revisions that have been made are reflected in PA/FEIS Chapter 2, *Proposed Action and Alternatives*, and are limited to things like clarifying that “cement” and not “concrete” would be stored in temporary laydown areas (compare Draft PA/EIS and PA/FEIS Section 2.3.1.3.7), that Unit 2’s temporary laydown area would be located “west” -- not “east” -- of Unit 1 (same), and that well permits and waste discharge requirements (WDRs) may not be required for the Project (compare Draft PA/EIS and PA/FEIS Section 2.3.1.3.9). Although these changes were not previously considered, they are not relevant to environmental concerns such that none would cause or contribute to an impact that is beyond the scope of impacts analyzed in the Draft PA/EIS.

The signing of the Solar PEIS ROD after the issuance of the Draft PA/EIS and before the PA/FEIS also is not a significant new circumstance relevant to environmental concerns because the MSEP is not subject to that decision or to the CDCA Plan amendments it made. Similarly, the removal of Alternatives 5 and 6 as described and analyzed in the Draft PA/EIS is neither a substantial change nor a significant new circumstance because the analysis and decisions in the Final Solar PEIS and ROD, which amended the CDCA Plan to designate lands within the Riverside East SEZ as a priority area for commercial-scale solar energy ROWs, rendered any further discussion or analysis contained in Alternatives 5 and 6 unnecessary.

Supplemental analysis also may be prepared where the agency determines that the purposes of NEPA would be furthered by doing so (40 CFR §1506.9(c)(2)). The BLM has considered this aspect of its discretion, and concluded that the purposes of NEPA would not be furthered by recirculation in this case.

5.6 Administrative Remedies

BLM and USEPA’s Office of Federal Activities will publish separate NOAs for the PA/FEIS in the Federal Register when the document is ready to be released to the public. The NOA to be published by the USEPA in the Federal Register will initiate a 30-day protest period on the Proposed PA to the Director of the BLM in accordance with 43 CFR §1610.5-2.

Following resolution of any protests, BLM will publish a ROD which may be accompanied by an Approved Plan Amendment. Publication and release of the ROD would serve as public notice of BLM’s decision on the Project Application.

5.7 List of Preparers

Though individuals have primary responsibility for preparing sections of the PA/EIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM’s Field Office, State Office, and Washington Office review the analysis and supply information, as well as provide document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review.

TABLE 5-4
LIST OF PREPARERS

Name	Job Title	Primary Responsibility
BLM – Palm Spring-South Coast Field Office		
Cook, Stewart	GIS Specialist	Mapping
Hill, Greg	NEPA Coordinator	OHV/Recreation/VRM
BLM – California Desert District Office		
Childers, Jeff	Planning and Environmental Coordinator	Land Use Planning and NEPA Compliance
Ludwig, Noel	Hydrologist	Water Resources
Marsden, Kim	Wildlife Biologist	Wildlife and Vegetation
Queen, Rolla	District Archaeologist	Cultural Resources
Thomas, Tiffany	Archaeologist	Cultural Resources
BLM – California State Office		
Brink, Dianna	Rangeland Management Specialist	Rangeland, Grazing, Invasive Species, Weeds
Conrad-Saydah, Ashley	Renewable Energy Program Manager	Climate Change, Environmental Justice, (transmission)
Keeler, Jim	Off-highway vehicle coordinator	Recreation
Lund, Christina	State Botanist	Botany
McGinnis, Sandra	Planning and Environmental Coordinator	Planning, NEPA Compliance
Wick, Bob	Natural Resource Specialist - Wilderness	Wilderness Characteristics Inventory/VRM
Environmental Science Associates		
Arent, Vanessa	Associate, M.S., Environmental Science	Energy Conservation
Barringhaus, Cory	Senior Associate, M.U.P., Urban Planning	Recreation and Public Access
Bray, Madeleine	RPA, M.A., Archaeology	Cultural Resources
Brownlow, Greta	Program Manager, M.A., Urban Planning and J.D.	Quality Assurance/Quality Control all sections
Cordery, Ted	Biologist, B.S., Wildlife Management (TEC-Ecological, LLC)	Vegetation and Wildlife Resources, Wildland and Fire Ecology
Costa, Peter	Transportation Specialist; M.S., Urban Planning and Public Policy	Transportation and Traffic
Cover, Doug	Senior Director, QEP	Air Resources, Noise, Greenhouse Gas Emissions and Global Climate Change
Duverge, Dylan	Geologist; M.S., Applied Geosciences	Visual Resources, Mineral Resources, Geology and Soils, Paleontological Resources
Eckard, Robert	Senior Associate; Ph.D., Water Quality	Global Climate Change, Water Resources
Fagundes, Matt	Physical Sciences Resource Area Leader; B.S., Environmental Studies	Air Quality, Noise, Greenhouse Gas Emissions and Global Climate Change
Hudson, Pete	Senior Geologist/Hydrogeologist, PD, CEG	Water Resources
Hutchinson, Jack	Senior Transportation Engineer, P.E.	Transportation and Traffic
Jaeckel, David	B.A. Geography / Environmental Studies and Urban and Regional Studies	Mineral Resources, Geology and Soils, Paleontological Resources
Johnson, Jennifer	Director, J.D.	Proposed Action and Alternatives, Quality Assurance/Quality Control all sections
Kershaw, Carol	Lands and Realty Specialist (Red Rock Consulting, LLC)	Lands and Realty
Kostalas, Alexandra	Senior Associate; M.A., Urban Planning	Land Use and Planning, Multiple Use Classes, Public Services

TABLE 5-4 (Continued)
LIST OF PREPARERS

Name	Job Title	Primary Responsibility
Environmental Science Associates (cont.)		
Lancelle, Karen	Associate Librarian	Administrative Record
Moore, Julie	Health and Safety Specialist; M.S., Ecology	Hazards and Hazardous Materials; Transmission Line Safety and Nuisance
Onaka, Jun	Planning and Economics Specialist; Ph.D., Urban Planning (Onaka Planning & Economics)	Environmental Justice, Social and Economics
O'Sullivan, Terry	Natural Resources Specialist, B.S. Natural Resources Management (O'Sullivan Resources, LLC)	Special Designations
Pittman, Brian	Senior Technical Associate; Certified Wildlife Biologist	Vegetation and Wildlife Resources
Scott, Janna	Senior Technical Associate, J.D.	Cumulative Projects, Quality Assurance/Quality Control all sections
Stewart, Shannon	Principal Technical Associate	Quality Assurance/Quality Control all sections
Strauss, Monica	RPA, Director, Senior Managing Archaeologist, M.A., Archaeology	Cultural Resources
Stumpf, Gary	Cultural Resources Specialist; M.A., Anthropology (Legacy Cultural Resource Consulting, LLC)	Cultural Resources

CHAPTER 6
Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per Liter
µg/m^3	micrograms per cubic meter
AAQS	ambient air quality standards
AB 32	California Global Warming Solutions Act of 2006
AB	Authorized Biologist
AC	alternating current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
AD	*Anno Domini*
AADT	Annual Average Daily Traffic
AF	acre-foot
AFY	acre-feet per year
AIRFA	American Indian Religious Freedom Act
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
AM	Amplitude Modulated
amsl	above mean sea level
AO	Authorized Officer
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
APM	Applicant Proposed Measure
APN	Assessor’s Parcel Number
ARB	California Air Resources Board
ARPA	Archaeological Resources Protection Act of 1979
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing Materials Standards
ATCM	Airborne Toxic Control Measure
ATV	all-terrain vehicle

BA	Biological Assessment
BC	Before Christ
BCC	Birds of Conservation Concern
BEA	United States Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BLM	United States Department of Interior, Bureau of Land Management
BM	Biological Monitor
BMPs	best management practices
BO	Biological Opinion
BOE	California State Board of Equalization
BRMIMP	Biological Resources Mitigation, Implementation, and Monitoring Plan
BRMMP	Biological Resources Mitigation and Monitoring Plan
BSPP	Blythe Solar Power Project
CAA	Clean Air Act
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
CalArp	California Accidental Release Program
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California - Occupational Safety and Health Administration
Caltrans	California State Department of Transportation
CAMA	California-Arizona Maneuver Area
CBC	California Building Code
CBOC	California Burrowing Owl Consortium
CCD	Census County Division
CCH	Consortium of California Herbaria
CCR	California Code of Regulations
CCS	crypto-crystalline silicate
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan of 1980, as amended
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDHCS	California Department of Health Care Services
CDMG	California Division of Mines and Geology
CDOC	California Department of Conservation
CDPA	California Desert Protection Act of 1994
CDPH	California Department of Public Health
CdTe	cadmium telluride
CEC	California Energy Commission

CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CMA	Congestion Management Agency
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRS	Colorado River Substation
CRT	cathode ray tube
CSC	California Species of Special Concern
CSRL	California Soil Resource Lab
CT	census tract
CUP	Conditional Use Permit
CUPA	Certified Unified Program Authority
CVGB	Chuckwalla Valley Groundwater Basin
CWA	Clean Water Act
cy	cubic yards
DAS	data acquisition system
dB	Decibel
dBA	A-weighted decibels
DC	direct current
DOD	United States Department of Defense
DOE	United States Department of Energy
DOI	United States Department of Interior
DPM	diesel particulate matter
DPV1	Devers-Palo Verde No. 1 Transmission Line
DPV2	Devers-Palos Verde 2 Transmission Line

DRECP	California Desert Renewable Energy Conservation Plan
DTC/C-AMA	George S. Patton’s World War II Desert Training Center/California-Arizona Maneuver Area
DTCCL	Desert Training Center California-Arizona Area Cultural Landscape
DTSC	Department of Toxic Substances Control
DWMA	Desert Wildlife Management Area
DWR	California Department of Water Resources
EAP	Emergency Action Plan
ECCMP	Environmental and Construction Compliance Monitoring Plan
ECM	Environmental Compliance Manager
ECP	Eagle Conservation Plan
EDD	California Employment Development Department
EIC	Eastern Information Center
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Field
EPAct	Energy Policy Act of 2005
EPCRA	Emergency Planning and Community Right-To-Know Act of 1986
EPRI	Electric Power Research Institute
EPS	Emission Performance Standard
ESA	environmentally sensitive area or Environmental Science Associates
FAA	Federal Aviation Administration
FE	Federally listed as endangered
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy and Management Act
FMAP	Fire Management Activity Plan
FR	Federal Register
FRA	Federal Responsibility Area
ft	foot
FT	Federally listed as threatened
FTA	Federal Transit Administration
FTE	full-time equivalent
FTHLICC	Flat-tailed Horned Lizard Interagency Coordinating Committee

FY	fiscal year
g	gravity
G	Gauss
gal	gallon
GCL	geosynthetic clay liner
GDP	gross domestic product
gen-tie	generation transmission
GHG	greenhouse gas
GIS	geographic information system
GLO	General Land Office
gpd	gallons per day
gpd/ft	gallons per day per foot
gpd/ft^2	gallons per day per square foot
gpm	gallons per minute
GPS	global positioning system
GSEP	Genesis Solar Energy Project
GWP	global warming potential
H_2S	hydrogen sulfide
HCP	habitat conservation plan
HDPE	high-density polyethylene
HFCs	hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
hp	horsepower
HPTP	Historic Properties Treatment Plan
HWCL	Hazardous Waste Control Law
Hz	Hertz
I-10	Interstate-10
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
IIPP	Injury and Illness Prevention Program
IM	Instructional Memorandum
in/mo	inches per month
in/sec	inches per second
in/yr	inches per year
IPCC	International Panel on Climate Change
kg	kilogram
KOPs	key observation points

kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
L_{90}	The A-weighted noise level that is exceeded 90 percent of the time during the measurement period.
lbs	pounds
LCD	liquid crystal display
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
LEPC	local emergency planning committee
LLC	Limited Liability Corporation
LOS	level of service
LRA	Local Responsibility Area
LTVA	Long-Term Visitor Area
m	meter
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mi	mile
ml	milliliter
mm	millimeter
MM	Modified Mercalli
MMRCP	Mitigation Monitoring, Reporting, and Compliance Program
mph	miles per hour
MRDS	Mineral Resources Data System
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
MSEP	McCoy Solar Energy Project
MW	megawatt
MWh	megawatt-hour
N_2O	nitrous oxide
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act

NERC	North American Electric Reliability Corporation
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	United States National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NREL	National Renewable Energy Laboratory
NSPS	New Source Performance Standard
NSR	New Source Review
NTP	Notice to Proceed
NWIS	National Water Information System
O&M	operation and maintenance
O_2	oxygen
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
OSHA	United States Occupational Safety and Health Administration
PA	Plan Amendment
PAR	Property Analysis Record
PCPI	per capita personal income
PCS	power conversion station
PDC	Power Distribution Center
PEIS	Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States
PFCs	perfluorocarbons
PFYC	Potential Fossil Yield Classification
PGA	peak ground acceleration
PL	Public Law
PM	particulate matter

PM10	particulate matter less than 10 microns in diameter
PM2.5	particulate matter less than 2.5 microns in diameter
POD	Plan of Development
PPE	Personal Protective Equipment
ppm	parts per million
PRC	Public Resources Code
PRPA	Paleontologic Resources Preservation Act
PSD	Prevention of Significant Deterioration
PSSCFO	Palm Springs South Coast Field Office
PTNCL	Prehistoric Trails Network Cultural Landscape
PUP	Public Use Permit
PV	photovoltaic
PVGB	Palo Verde Groundwater Basin
PVID	Palo Verde Irrigation District
PVMGB	Palo Verde Mesa Groundwater Basin
PVVGB	Palo Verde Valley Groundwater Basin
PVVTA	Palo Verde Valley Transit Agency
R	State characterized as rare
RCFD	Riverside County Fire Department
RCRA	Resource Conservation and Recovery Act of 1976
RCTC	Riverside County Transportation Commission
REAT	Renewable Energy Action Team
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RPS	Renewables Portfolio Standard
RQ	reportable quantity
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SCADA	supervisory control and data acquisition
SCE	Southern California Edison
SDG&E	San Diego Gas and Electric Company
SDWA	Safe Drinking Water Act
SE	State listed as endangered
SERC	state emergency response commission
SEZ	Solar Energy Zone
SF	Standard form
SF_6	sulfur hexafluoride

SHPO	State Historic Preservation Officer
SLRU	Sensitivity Level Rating Units
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SO_4	sulfate
SOPs	standard operating procedures
SO_X	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SQRU	Scenic Quality Rating Units
SRA	State Responsibility Area
ST	State listed as threatened
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCR	The Climate Registry
TDS	Total Dissolved Solids
TNC	The Nature Conservancy
TSCA	Toxic Substances Control Act of 1976
TQ	threshold quantity
UL	Underwriters Laboratory
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOT	Unite States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UXO	unexploded ordnance
UV	ultraviolet
V	volts
VdB	velocity decibel
VMT	vehicle miles traveled
VOC	volatile organic compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management

W	watts
WAPA	Western Area Power Administration
WDR	Waste Discharge Requirement
WEAP	Worker Environmental Awareness Program
WECC	Western Electricity Coordinating Council
WHMA	Wildlife Habitat Management Area
WIU	Wilderness Inventory Unit
WL	Watch List
W/m^2	watts per square meter
WNV	West Nile Virus
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area
yr	year

CHAPTER 7
Glossary

A

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the site or would be contiguous or partially contiguous with that of the site but for a street, road, or other public thoroughfare separating them.

Air Basin: A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region: A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvium: a fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries.

Alluvial Fan: Fan shaped material of water deposited material.

Ambient Air Quality Standards (AAQS): A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air: Outdoor air in locations accessible to the general public.

Archaeological district: A significant concentration, linkage, or continuity of sites, buildings, or features important in history or prehistory. There can be discontiguous districts composed of resources that are not in close proximity to one another

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) to protect life and safety from natural hazards.

Attainment Area: An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

C

Cancer: A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Climate: A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL): A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Corrosive Soils: Potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures.

Cretaceous: In geologic history the third and final period of the Mesozoic era, from 144 million to 65 million years ago, during which extensive marine chalk beds formed.

Criteria Pollutant: An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat: Habitat designated by the U.S. Fish and Wildlife Service under §4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Landscape: A geographic area, including both natural and cultural resources, associated with a historic event, activity, group, or person; or, a geographic area that has been assigned cultural or social meaning by associated cultural groups.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

Class I: A professionally prepared study that compiles, analyzes, and synthesizes all available data on an area's cultural resources. Information sources for this study include published and unpublished documents, BLM inventory records, institutional site files, and state and National Register files. Class I inventories may have prehistoric, historic, and ethnological and sociological elements. These inventories are periodically updated to include new data from other studies and Class II and III inventories.

Class II: A professionally conducted, statistically based sample survey designed to describe the probable density, diversity, and distribution of cultural properties in a large area. This survey is achieved by projecting the results of an intensive survey carried out over limited parts of the target area. Within individual sample units, survey aims, methods, and intensities are the same as those applied in Class III inventories. To improve statistical reliability, Class II inventories may be conducted in several phases with different sample designs.

Class III: A professionally conducted intensive survey of an entire target area aimed at locating and recording all visible cultural properties. In a Class III survey, trained observers commonly conduct systematic inspections by walking a series of close interval parallel transects until they have thoroughly examined an area.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation’s rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

D

Day/Night Average Sound Level (Ldn): A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

Decibel (dB): A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Desert Pavement: A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Desert Wildlife Management Area (DWMA): areas established in the NECO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

E

Enhancement: A management action designed to improve visual quality.

Equivalent Average Sound Pressure Level (Leq): The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Erosion: A natural process whereby soil and highly weathered rock materials are worn away and transported to another area, most commonly by wind or water.

Ethnographic Resources: Resources representing the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

Expansive Soils: A soil which significantly changes its volume in horizontal and vertical planes with changes in moisture content.

F

Fault (active): A fault that has had surface displacement during Holocene time (last 11,000 years).

Fault (potentially active): A Quaternary-age (last 1.8 million years) fault that lacks evidence of Holocene-age displacement.

Fluvial: Of, relating to, or occurring in a river.

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Geomorphic Province: Naturally defined geologic regions that display a distinct landscape or landform.

Greenhouse Gas (GHG): A gaseous compound that absorbs infrared radiation and re-radiates a portion of hat back toward the earth’s surface, thus trapping heat and warming the earth’s atmosphere.

H

Habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP): Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz): A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Holocene: Of, denoting, or formed in the second and most recent epoch of the Quaternary period, which began 10,000 years ago at the end of the Pleistocene.

Hydrocarbons: Any organic compound containing only carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

Hydrocompaction: Generally is limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids.

I

Igneous: Rock, such as granite and basalt that has solidified from a molten or partially molten state.

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Indigenous: Being of native origin (such as indigenous peoples or indigenous cultural features).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

Invasive Species: An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate: Non-linear, isolated archaeological features without associated artifacts.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

L

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Landslide: A slope failure that involves downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands, potash, phosphate, sodium, and geothermal steam.

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Liquefaction: A condition in which a saturated cohesionless soil may lose shear strength because of a sudden increase in pore water pressure caused by an earthquake.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

M

Maintenance Area: An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Memorandum of Understanding (MOU): A written but noncontractual agreement between two or more agencies or other parties to take a certain course of action.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other materials defined in 43 CFR 3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR §1508.20).

N

National Pollutant Discharge Elimination System (NPDES): The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a state certification that the discharge complies with other provisions of the Clean Water Act.

National Register District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: Indigenous peoples of the western hemisphere.

Nitric Oxide (NO): A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2): A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx): A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

Nonattainment Area: An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2), any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Organic Compounds: Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Ozone (O3): A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth’s surface.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time (600 million to 280 million years ago) between the Late Precambrian and the Mesozoic eras and comprising the Cambrian, Ordovician, Silurian, Devonian, Missippian, Pennsylvanian, and Permian periods.

Particulate Matter: Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals. See PM10 and PM2.5.

Peak Ground Acceleration (PGA): A common measure of ground motion during an earthquake. The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g. hard bedrock, soft sediments, or artificial fills).

Peak Particle Velocity: A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Petroglyph: Pictures, symbols, or other art work pecked, carved, or incised on natural rock surfaces.

pH (parts hydrogen): a measure of the acidity or basicity of a water-based solution. Pure water is considered neutral with a pH of 7, while solutions with a pH less than 7 are said to be acidic and solutions with a pH greater than 7 are basic or alkaline.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946; Sahrhaftig 1975).

Pleistocene (Ice Age): An epoch in the Quarternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciation, during which continental glaciers covered nearly one fifth of the earth’s land.

Pliocene: The Pliocene Epoch is the period in the geologic timescale that extends from 5.332 million to 2.588 million years before present.

PM10 (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM10 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5 to 10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

PM2.5 (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, PM2.5 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0 to 2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor: A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric: Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with nonnative culture(s).

Protocol Agreement (Protocol): A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era in the geologic time scale of the ICS. It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.

R

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality.

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Route: “Routes” represents a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales or special permits to local governments. See also Mineral Material Disposal.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

Secretary of the Interior: The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale, that are formed from sediments or transported fragments deposited in water.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Settlement: A process by which soils decrease in volume. Earthquake induced settlement results when relatively unconsolidated granular materials experience vibration associated with seismic events. Local settlement can occur when areas containing compressible soils are subject to foundation or fill loads.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Historic Preservation Office (SHPO): The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the National Historic Preservation Act.

State Implementation Plan (SIP): Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB): Created in 1967, joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California’s waters. The mission of the nine Regional Water Quality Control Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State’s waters, recognizing local differences in climate, topography, geology, and hydrology.

Stratigraphy: The order and relative position of strata (a layer of rock in the ground) and their relationship to the geological time scale.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

Sulfur Dioxide (SO2): A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

T

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began 65 million years ago and lasted more than 63 million years, until 1.8 million years ago. The Tertiary is made up of 5 epochs: the Paleocene Epoch, the Eocene Epoch, the Oligocene Epoch, the Miocene Epoch, and the Pliocene Epoch.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Toxic: Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism’s tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties: Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community’s history and are important in maintaining cultural identity.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. §6 of the Archaeological Resources Protection Act states that “no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands…unless such activity is pursuant to a permit issued under section 4 of this Act.”

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness.

Vehicle Miles Traveled (VMT): The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat. 891), §2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in §603 of FLPMA and §2(c) of the Wilderness Act of 1964 (78 Stat. 891). The source for both of these is BLM’s IMP and Guidelines for Lands Under Wilderness Review (December 1979).

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